1899

To the Legislature of South Carolina.

SECOND ANNUAL REPORT

OF THE

State Board of Health

OF SOUTH CAROLINA,

FOR THE FISCAL YEAR ENDING OCTOBER 31ST, 1881.

CHARLESTON, S. C.:
WALKER, EVANS & COGSWELL, PRINTERS AND STATIONERS,
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At the Annual Meeting of the South Carolina Medical Association, held in Newberry, April 19th, 1881, the following preamble and resolution, presented by Dr. M. L. Sharpe, of Anderson, were unanimously adopted:

Whereas, An efficient State Board of Health is a necessity in the present advanced age of civilization and sanitary reform; and whereas its usefulness and efficiency can be greatly promoted by the united aid of the whole profession throughout the State, therefore be it,

Resolved, That not only as a Medical Association, but as individuals, we pledge our hearty support and co-operation to the State Board of Health in its efforts at sanitary reform in the State of South Carolina.

AN ADDRESS TO THE LEGISLATURE

ON

THE SANITARY NEEDS OF THE STATE;

WHAT A STATE BOARD OF HEALTH CAN ACCOMPLISH.

BY A SPECIAL COMMITTEE OF THE "MEDICAL ASSOCIATION OF SOUTH CAROLINA"—THROUGH THE EXECUTIVE COMMITTEE OF THE STATE BOARD OF HEALTH, OCTOBER, 1881.

To the Honorable the Senate and House of Representatives:

This Introduction to the annual volume of Reports of the Proceedings of the State Board of Health, including the several Bills and papers published with it, should, we think, embody the general argument in favor of "State Medicine;" and it should also briefly explain, in the order of their importance, the special subjects which may demand the consideration of the Legislature.

As advised by Dr. Henry J. Bowditch (1st Massachusetts Reports, Jan. 1870), besides a carefully prepared alphabetical index, there should be printed in an advanced fly-leaf a clear and succinct table of contents,—so that the busiest member of the house, or the man most engrossed in affairs can see at a glance what he may desire to inform himself upon.

Papers of a useful character, if they meet your approval, should also be published in one or more of the principal journals in the State, or be otherwise widely distributed so that the people everywhere being equally instructed, may be prepared to support and act in concert with their representatives in all measures regarding the vital subject of health.

Through the instrumentality of that great educator, the press, and by speakers, health matters must be brought home to the mass, otherwise schemes fraught with the most important interests of humanity, and based upon the scientific knowledge of the Sanitarian and the expert, amount to nothing.

That "Health is wealth," is an old maxim, but it is also happiness and power; for whatever improves the health of the individual increases the sum of the life, and enhances the happiness and wealth of the people collectively, and a vast addition is made to the prosperity, the energy and power of the commonwealth. You cannot therefore legislate for higher and nobler purposes than these. You will not be acting beyond what Jno. Stuart Mill calls "the limits of the province of government," but will realize the aphorism of a Beaconsfield: "The health of the people is the first duty of the statesman,"*

The truth is you cannot long avoid such questions: Nearly all the powers of the first rank are already studying, organizing or enforcing public and private hygiene, and sooner or later these will press themselves upon you with the force of the public sentiment of the world, as well as from their necessity and intrinsic merits. But we cannot thrust hygiene and sanitation down the reluctant throats either of the people or of their representatives. The "Body politic," the "power behind the throne," and the "business interests" of the country must each be prepared for their reception by convincing proofs of their advantage, and then they will themselves demand them.

Legislators, (we speak impersonally,) will vote supplies for a good many different and indifferent objects, but for others with apparently remote advantages, such, for example, as the preservation of health, before deciding, the sanitary fat (as Surg. Billings observes,) will keep up for a time a mighty sizzling! The short-sighted selfishness of men—what may be termed a political *myopia*,—the conflicts of narrow, local interests, the injury to the trade and gain of the few who are interfered

* Quoted by the Hon. Erastus Brooks in his paper on "What the State owes the people," Am. Public Health Association, meeting in New Orleans, Dec., 1880.

with for the benefit of the many, the proneness to procrastinate—specially where money is to be paid out, and because it is notorious that a man will often devote for the security and advantage of his property, his dependents, and even for his animals, what he would hesitate to sacrifice for the preservation of the life of his family, a natural, and sometimes a prudent spirit of economy, all these tend to obstruct and delay the adoption of measures of the very highest utility. Men are unwilling to diminish their comfort, their business, or their earnings; so it is even possible that through the self-satisfied ignorance, the obstinacy, and the penny-wise and pound-foolish fatuity of some, in a single locality 10,000 days in a year are lost by sickness, and 1000 preventible deaths occur! Such is the strange, mixed web of human motives and actions.

The State Sanitarian, when armed with power and authority, and acting under the sanction of law, endeavors to enlighten himself also as regards the knowledge, the devices and the progress made by older or wiser communities; he acquaints himself with what is being done in Germany, in France, in England; what is his own country by such enlightened commonwealths as Massachusetts, Michigan, and more recently by Alabama—which is moving with rapid strides,—and by others who have set the example of advance in every thing that concerns State medicine.

When it is known, too, that those who undertake the supervision of the public health in all its relations—whether they be physicians or laymen—do so without compensation and to their own detriment, their self-denial in efforts to promote the public welfare should meet with a liberal encouragement from the representatives of the people; specially should this be the case, if it is evident that what they propose is sensible and practical in its character. The truth is, it is asking too much of a medical or any other man, to devote his time, his experience and his faculties to organize and put in working order a State Board of Health, with its complex and exacting demands upon his attention and the conjoint supervision of the sub-boards in thirty-three Counties. It is difficult to find a single

capable and efficient chief with marked capacity as an organizer, a master of detail, not frightened at the shadow of a fraction, but who revels in figures, who is able and willing to abandon his private business in order to devote himself to such a task, unless he is released from all other cares and is amply compensated. Independent, competent and self-sacrificing amateurs, or those rare men, who, oblivious to the *res angusta domi*, seek solely to benefit their country or ask only for reputation and honor, are not readily picked up. And so, in a few brief years, we have already had a succession of officers—men of ability doubtless—whose services we fortunately were able to secure, who, indeed, organized the State Board of Health, and who, putting their shoulders to the wheel, by their industry and talent gave an impulse to the work but in a little while their unstimulated enthusiasm has evaporated; or from causes best known to themselves they have abandoned the work to new and untried successors.

We believe that a liberal expenditure for such purpose is wise. Other State have made large appropriations for them. In Massachusetts, Michigan, Alabama, Mississippi, New York and elsewhere these appropriations range from $3,000 to $45,000, including expenditures for quarantine. Special scientific investigations, essays and practical papers are paid for—Massachusetts devoting $1,700 in one year for such work; a single individual who is specially charged with supervising the whole subject in all its departments receives over $2,000,—the secretaries from $800 to $1,000 per annum. This is the best and only method to secure results which will amply repay the cost in saving life and in improving the health, comfort, morals and happiness of the people.

When long since a member of this committee was reviewing for a Medical Journal which he published an Annual Health Report then made to your Honorable body by the late Robert W. Gibbes, Jr., M. D., he was impressed by the facility with which even so unavoidably incomplete an exhibit enabled the reviewer to estimate the relative health of the several districts of the State. It permitted any one to note the prevalence of special diseases in certain sections, and gave him consequently some intimation of what hygienic measures

were necessary to lessen or eradicate them. But now, when a State Board of Health is organized and equipped under the control of the Legislature, and it is proposed to secure full returns of "vital statistics," and information of a multifarious and useful character embracing everything that concerns the safety of the citizen throughout our borders, it can hope to add far more largely to the public welfare. For now, this Board is not collecting information as regards diseases only, the number of marriages, births and deaths, and the relative statistics of the separate counties of the State; it pretends—and we do not speak immodestly, as we do it with your aid and with the sanction of law—to trace out and destroy the *causes* of disease, to protect the public from dangers, and to compel the citizen, if need be, to take care of himself, his family and his neighbor. It will examine everywhere into the economy of his household, the air he breathes, the water he drinks, the food he consumes. If he is ignorant, that it may save himself and others, the Board will insist that his child be vaccinated; it will ventilate his school-room, his church, his theatre, and render more secure and rapid the means of egress from them; if imprisoned, it will inspect his quarters, his clothing, his food, his drink; if he is the inmate of an asylum for the insane, a felon in a penitentiary, or working in a stockade it will demand that his superintendent or his overseers treat him with the care and skill which his condition requires, or with the humanity due to a human being. If infection threatens his life whilst a resident in the city, even at the risk of lessening the profits of trade and commerce, it will prevent the approach of whatever may bring disease; it will take him out of his crowded hovels, or cleanse these and their surroundings; if danger approaches from the land side it will enforce proper observances of transportation or of railroad quarantine; it will detain and disinfect their passengers, their baggage and effects in healthy tents or temporary cantonments in the country, lest these infect healthy localities—thus also violating no law of hospitality towards the sick and distressed.

If he is a dweller in the country the Board will drain the marshes which poison his residence, and teach him to remove

his pigsties, privy and dung-heap to a safe distance from his house and well—lest these be contaminated by the effluvia or by interstitial drainage. It will by lectures, by papers and tracts on sanitary subjects, and by every means of enlightenment, endeavor to improve his mode of life and elevate the civilization and personal comfort of his family. But whether he be in town or country, it will teach him how he can be poisoned by the water or the milk which is drank, or the air which is breathed; or how his children may die by a preventible disease contracted during a kindly visit to a neighbor, by attending a school, a church or a funeral,—in other words how they may live longer, more comfortably, and more happily.

But let us limit our attention for a moment to three important divisions of the State, whilst we examine into some of the defects whether natural, accidental, or acquired, under which they labor and which demand correction or removal:

We declare, *imprimis*, that three great scourges have afflicted this country with countless woes, namely: *Bad air*, *bad whiskey* and *bad biscuits!* Their baneful effects cannot easily be exaggerated: The first deteriorates the blood, out of which are the issues of life and death,—the second is the cause of frequent crimes and sufferings,—and the third make us pale, lean and miserable. *Bad teaching*, though it has no influence upon health, from the magnitude and importance of its evil results, namely, its disastrous effects upon the education of youth, whereby the intellectual standard of the State is lowered, might well constitute a fourth.

1st. It must show even to the resident of the mountain plateau—who in fancied security is invested by us with the possession of arcadian simplicity, virtue and health, and all that poets erroneously imagine to be attendant upon a peasant's life—that the fresh mountain air is not breathed by him; that though he be a good citizen, a true and honest man he is often steeped in ignorance of every sanitary law which increases comforts or prolongs life, or is guilty of excesses which neutralize or destroy every advantage of position or of climate which he may naturally possess; that though not a whiff of malaria invades his dwelling with the eagles, that he is living

in discomfort and surrounded by filth; that the air of his badly constructed house or cabin, with its small windows and its contracted rooms, is contaminated through his own excessive rudeness, and from this arises the special fever which afflicts him;* that he does not comprehend or practice in perfection one single art of cookery,—he can stew or fry, it is true, but he can neither boil, nor bake, nor roast. He eats and drinks without discrimination or judgment, nor does he conceive of the close relation which these bear to health. He also dresses inadequately. Consequently, though his stature be far above the medium, and his environment the most desirable, he has ruined his digestion and impaired his physical powers, his vigor and energy, by his own deplorable mode of living,* and it is only the early rising and open-air life which maintains his imperfect and deficient vitality.

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*We will string the following extracts, which come from high authority, as pearls to our paper:

"That an obscure and internal cause, which in our own ignorance of its nature is called a proneness or disposition to receive the poison, is necessary for its development, does not affect the truth of the fact that *without filth the disease* (Typhoid fever) *is not born*." "Prevention of disease," by Geo. Derby, M. D., Mass. Reports:

'Fresh air by day and by night, strong and nourishing food, dry soil on which to live, sunlight and warm clothing are the means of saving many lives which would have been hopelessly lost in the preceding generation." * * * *

"A house whose entry smells musty is dangerous. Avoid it. Don't live in it. Keep the children out of it." Derby upon "Causes of Typhoid Fever," in Mass. Rep., 1875.

Surg. J. S. Billings, in his Presidential address before the American Public Health Association, at New Orleans, 1880, says:

"Foul air, food badly cooked, impure water supply, and dirty skins are responsible for a vast amount of sin and crime; and ignorance and filth are Siamese twins." Also: "A faulty system of house drainage will produce not only actual sickness and death, but lassitude, want of appetite, weariness and fretfulness, dissatisfaction among and with the servants, and a pessimistic state of mind with regard to things in general, upon which the weekly sermon will have very little influence."

The distinguished English sanitarian, Dr. Lyon Playfair, stated in his address at Glasgow, (see "Gaillard's Medical Journal," August 18, 1881,) that "when the civilization of the Egyptians, the Jews, the Greeks, and the Romans faded, the world passed through a dark age of mental and physical barbarism. For a thousand years there was not a man or a woman who ever took a bath." "No wonder there came the wondrous epidemics of the middle ages, which cut off one-fourth of the population of Europe."

*Prof. S. H. Dickson remarks from his own observation, that the mountaineer does not suffer merely from dyspepsia; this disease in him extends below the stomach—it is a *duodenitis!*

We know that these strictures are not fanciful, and do not think we are unjust in making them; for the proper and economical preparation of the food we consume is one of the very highest marks of civilization,—and no practical mind disregards that through inattention to which the capacity and efficiency of peoples as well as armies are diminished. Even in large and enlightened cities in this country precise instruction is given on such subjects.* The perfection to which the French cuisine has attained is familiar to all, and a maxim of their famous gastronomic author Brillat Savarin, is: "Tell me what you eat, and I will tell you what you are" (*Dites moi ce que vous mangez, et je vous dirai ce que vous etes ;*) and not to cite many others, one of the most accomplished writers in England—a physician to the Prince of Wales (Thomas King Chambers)—has thought it necessary to publish a volume on "Food and Diet" for the benefit of the people of Great Britain.

Though there be numerous exceptions where people make delightful breads, and cook admirably, there is no need to disguise the fact that not in these regions only, but in many portions of this State our deficiencies with regard to culinary matters are lamentable in the extreme, and require active reform by the sanitarian. We are far below the civilization of Europe in these respects—and the foreigner often comments upon our air of ill health.

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*We must give place in a note at this point to one or two confirmatory extracts from a paper by Miss Campbell, entitled "A Year in a Southern Cooking School," in "Our Company," Vol. v, ii, 1880. This lady established such a School in a Seminary for young ladies in Charlotte, N. C., where, as she relates, classes were taught with great interest and success.

"The Southern dietary was and is utterly unsuited to either climate or constitution. Profuse in the extreme, its procession of hot breads, its inordinate use of fat in the form of ham and bacon, and its equally inordinate coffee and spirit drinking, ensured a nation of dyspeptics." * * "Now no maxim in dietetics has greater force than that which demands varied diet as one chief producer of varied thought." * * * "A well fattened, properly killed foul is almost unknown" "Roast beef, washed and soaked 'till the blood is out,' then par-boiled half an hour, and at last baked three or four hours or more." "The Cooking School means for the coming generation not only sounder bodies, but as the natural and inevitable result, sounder minds."

We also believe that they will assist vastly in attaining that great *desideratum* the *mens sana in corpore sano.*

The abuse of food is noticed equally in well-to-do people, as in those of very limited means who are compelled to a meagre dietary. On the plantations before the war, children were almost habitually "over-fed"—which was the cause of the far greater frequency then than now, of croup, gastric disorders, opthalmias, convulsions, etc.,—not to speak of its influence upon their intellects. Very many young men test their constitutions to a wretched extent; indulge in spirits and tobacco "inhalation"—and do every thing to excess, regardless of their frightful effects. Hence the cry—originating with the mothers, wives and sisters, and drowned by the politicians—about "prohibition" and other restraining and sumptuary laws.

As for food waste, it is so notorious, as scarcely to require a reference. Inconceivably vast quantities of excellent material, flour, meats of every description, fresh and salted, etc., have been and are ruined in the preparation for the table. Not to speak of the large hotels, which are often no better, let any one inspect the tables of the taverns, boarding and private houses in towns and country districts, and compare them with an English inn, or a French restaurant. Let him but dream in memory of the substantial viands, the light and delicate wines, the "*Soupe à la Reine*," or the "*Poulet à la Marengo*," and in the bitterness of his regrets and reaching the culminating point in his aspirations, he will be likely to exclaim: "See Paris and die!" All—the poor specially—cannot enjoy these luxuries, but they can greatly improve what they do have.

Rapid eating—what may be called the bolting of food, is incompatible with good health. Though seemingly a private matter it is not a trifling one, and sanitarians and health officers may have to take it out of the hands of parents, or give them some specific advice.

2d. With regard to those living in the lower counties, along the borders of the swamps, the sanitarian must show them also wherein, through a disregard of the dictates of common prudence, through ignorance or indifference, they have failed to secure even tolerable health. We must teach them how

essential are warm clothing and temperance, and the disastrous results in our climate of those indulgencies—whether they are vicious or only because they are simply excessive—which impair health and strength and the ability to resist the inroads of disease. We must instruct them more precisely as to the ill effects of malaria, its destructive influences upon the blood-making organs—the liver, the spleen and the blood itself; with the means of either warding it off, or preventing its reception into the system by the creation of an artificial atmosphere, by a better location of their dwellings, the interposition of a barrier of trees—with the dangers of exposure, whilst fatigued, to dews, night air, damps and cold; or the methods of neutralizing or destroying the poison after it has been breathed.

It is not speaking too strongly to affirm: that by the dissemination of sanitary knowledge, by the new resources of the physician and chemist, by drainage* of the soil, the healthfulness and the value of the land—which will thus also be opened to immigrants—and the whole aspect of many of those living in the lower or alluvial districts, will be changed; their pale, sickly bodies, their swollen livers and spleens, their complexions most like to tanned leather, their intelligence and spirits often dulled by ill-health—all will be improved by the wider dissemination of the remedies applicable to these evils.

3d. We must strive to arrest degeneracy, physical as well as intellectual and moral, in the cities likewise—where the crowded life, the impure or infected air and the malignant vices of the town often lead to serious evils—which it is the province of the sanitarian to reform. It is only in pleasantry that Charles Lamb praises the "sweet retirement of streets," and Dr. Oliver Wendell Holmes in lauding all active sports and out-door exercise as improving the physical health of the people—whilst lamenting the degeneracy which springs from the want of them—also indulges his humorous

* See "Drainage" in the Introduction to "The Resources of the Southern Fields and Forests." 1869.

vein, but provides good argument for us: "I am satisfied that such a set of black-coated, stiff-jointed, soft-muscled, paste-complexioned youth as we can boast in our Atlantic cities never before sprang from loins of Anglo-Saxon lineage;" and his belief is "that the total climatic influences here are getting up a number of new patterns of humanity, some of which are not an improvement on the old model"—"any thing is better than this white-blooded degeneration to which we all tend." ("Autocrat of the Breakfast table.") Mr. Ruskin advises ("Queen's Gardens") that when we read a true poet, or a philosopher we add, examine closely what he says, for there is sure to be truth at the bottom.

The wise legislator as well as the hygienist, like the Spartan law-giver, should never rest in the endeavour to improve and strengthen not only the individual, but the Race also. Comparisons are sometimes odious, but contrast the average Briton with the American and note the difference in vigor and physique, in the superior qualities of robustness, strength and power of endurance of the former. Let us learn to practice some of those habits and imitate those methods of living which created this difference.

We will be permitted to add from personal knowledge that already, within the past forty years, a vast improvement has been made in the mode of living, in the greater knowledge of culinary matters, in the comforts, refinements and the education of the people of many portions of our beloved commonwealth. The schools and colleges are more numerous, and far better than they were. The introduction and manufacture of beer and of better low-priced wines is a most important advance; and all this progress is only an earnest of what in the future we may attain to. We can present no more elevated objects for your consideration.

After the mention of these special examples where reform is needed, we will indicate other subjects upon which we propose to act in concert with you:

We will declare and define for all of our citizens what are legal nuisances, to be restrained or punished by law.

We will protect the people from the vicious practices of charlatans and empirics; from those who would sell them poisons, adulterated and spurious drugs, or articles of food.

We will go further and like that fabled deity who eat his own offspring, we will see that their medical attendants are properly educated, morally and intellectually; and shall not be permitted to offer their services as physicians unless possessed of a diploma from a respectable, legalized college.

We will increase the requirements for the education and licensing of druggist clerks, and give greater security in the preparation, sale and dispensing of medicines—and thus lessen the number of those shocking accidents which are of such frequent occurrence.

We will see that those working signals on land and sea—switchmen and watchmen, steersmen and pilots—can tell yellow or blue from green, lest cars telescope, or vessels collide—and a holocaust of victims be the penalty of defective vision in those, one of whose qualifications is to distinguish colors.*

In conjunction with the National Board of Health we will establish and define the intricate relations of, and hold plenary control over Inter-State Quarantine.

We will stamp out or eradicate at their inception the contagious diseases before they get a foot-hold in any community.*

We will teach to our people that so fatal a malady as consumption is dependent upon soil moisture—that great deduction of Bowditch!

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*At the recent meeting of the International Medical Congress in London, it was stated that "the ophthalmic section has prepared a series of tests for persons working signals." Prof. Donders was made Chairman of this International Committee The researches of Wyman and others in this country are well known.

*Dr. Budd, of Bristol, England, in speaking of Scarlet fever—one of the most subtle and infectious of all diseases—remarks: "For a period of nearly twenty years during which I have been employed in a very wide field, I have never known the disease to spread in a single instance beyond the sick room, and in a very few instances within it" Paper on "Preventive Sanitary Code." See it fully quoted in Dr. Elisha Harris's article on "The Domestic Pestilences," American Public Health Transactions, 1881.

We have had two cases of Scarlet fever and one of Diphtheria in families, each of which contained several young children, where these diseases seemed to have been arrested by "preventive" measures—disinfectants internal and external.

We will invoke the aid of the civil engineer in the remodeling or reconstruction of the sewerage works of our cities and towns; and grant certificates to owners of houses which have been properly constructed as regards plumbing, ventilation, etc.,—which will increase their value for residence, for rental or as investments.

We will also control the management of abattoirs, tanneries, manufacturing and other establishments, where injury to the people may ensue from imperfections or abuses in their operation.

We will seek to induce your honorable body to declare and define more precisely the rights of the citizen to create reservoirs, or to dam up or otherwise restrain the escape of water, thereby endangering the health of themselves or others.

If need be we will create an abode for the reception and treatment of inebriates; and an additional Asylum for the "Incurable and harmlessly Insane"—so as to relieve, in a measure, the demands made upon the State Institution.

We will consider the propriety and feasibility of an attempt to limit the ravages of those diseases which, more than ever before are sapping the life-blood of the nations—even to the third and fourth generations.

Let us refer to some other special subjects which have engaged, or should engage the attention of a State Board of Health,—hoping that our immediate Secretary, and also that able and intelligent men throughout the State will be induced to prepare papers which can be made instrumental in eliciting and diffusing information for the people. The republication here of such practical essays as those on "The Prevention of Disease," made to the Massachusestts Board of Health, as far back as 1870, by Dr. Geo. Derby, their late able and devoted Secretary; on "Inebriate Asylums or Hospitals," by Dr. H. J. Bowditch, their President, (Mass. Rep., 1875;) on the "Restriction and Prevention of Diphtheria," by Dr. Baker—equally prominent as Secretary to the Michi-

gan Board;* on "The Value of Health to the State," by W. E. Boardman, (Mass. Rep., 1875;) the recent paper on "Diphtheria in Schools," read at New Orleans, (Am. Public Health Rep., vol. vi, 1881;) "The Preventive Sanitary Code against Scarlet Fever," previously referred to, by Dr. Budd, of Bristol—each and all of these would serve to instruct our people in the great, growing and supremely important subject of sanitation.

The following are subjects for consideration and special Reports, as time and means permit:

1. Elementary paper on best modes of securing and preserving the health of the body from a knowledge of its "vital processes," its conformation, etc,—Elementary Physiology in brief.

2. Vital Statistics: Including diseases, births, marriages and deaths.

3. General Sanitation.

4. Prevention of Diseases: With methods of stamping out or limiting its spread—as of epidemics, typhoid and typhus, yellow and malarial fever, small-pox, scarlet fever, measles, diphtheria, whooping cough, etc.*

5. Cost of Epidemics: Economy of Sanitation—or evidence of the addition to the health, wealth and power of a community from measures tending to promote their health and longevity; with the *money cost* of sickness, etc.

6. Nature and danger of contagion, putridity, inadequate supply of air, etc.

7. On question of forcible isolation of those sick from infectious diseases.

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*This paper, recently revised by Drs. Lyster and Baker, has been stereotyped, so that State and Local Boards may obtain them. See Report of Michigan Board, 1881.

*It is computed that the annual loss from malarial fevers in Alabama is five million dollars—[Trans. State Med. Association, 1881, p. 143]—and Dr. Billings computes of the country at large that "a hundred thousand deaths have occurred among us which might have been prevented, and two hundred thousand of our people have been constantly sick and suffering from causes which we have every reason to believe might have been avoided."

8. Construction of Hospitals and Infirmaries for communicable diseases, and avoiding (as recommended in Michigan Rep., 1881,) the use of the name "Pest House,"—or "Lazaretto," we would add.

9. Compartive duration of life in the different counties, with the diseases prevalent in each.

10. Geographical, Geological, Climatic and other peculiarities of separate counties, or of limited sections; causes of death therein; nature of soil, season, water, air; of population, race, inheritance and occupation.

11. Meteorology of State, past and present, including temperature; effects, favorable or the reverse, of moisture, swamps, forests, drainage, etc.; prevalence of winds, storms, dryness, ozone; barometrical state, dew point, rainfall, etc.

12. The Botanical, Mineral, Agricultural and other resources of the State, and as they effect the health and welfare of the people.

13. Influence of moisture, or of its absence, upon the production of consumption.

14. Cleanliness of the person; use of water, bathing, etc., in health and disease; of suitable clothing, preservative power of flannel and woolen; management and food of infants and children, in order to prevent disease.

15. Purification of the air, and ventilation of habitations, churches, theatres; of railroad cars; of premises, sewers, etc.

16. Impurities, composition and purification of the water of wells, cisterns, reservoirs, streams, etc.

17. Recommendations regarding the construction and management of water closets, privies, sewers, tunnels, cellars, and their disinfection, with a list of approved disinfectants and deodorisers; dry-earth closets.

18. Model Lodging Houses, cheap homes for the poor.*

19. Prevention of Accidents; list of antidotes, etc.; Life saving apparatus on land, water and ships.

20. Cremation; extra or intra-mural interments; proximity to grave yards, cemeteries, etc.**

*See paper on "Tenement House Reform." by Jas. Gallatin Esq., President Sanatary Reform Society, N. Y. Trans. Am. Public Health Association, vol. VI.. 1881.

**See paper by Dr. Boardman, Mass. Report.

21. Causes and explanation of apparent high death rate of Charleston—effects upon its trade and general prosperity.

22. On various trades in large centres of population.

23. On establishment of schools, or of a chair in existing colleges, for instruction in sanitary science, hygiene, etc.*

24. Special Reports, volunteer or contracted for, by physicians and others of the cities, towns and sections of the State; their topographical, sanitary or other features, their advantages or defects.

25. The nature and treatment of inebriety and the legal management of inebriates (recently proposed in Alabama, see Trans. State Med. Association, p. 116, 1881.)

26. Existence and prevention of criminal abortion,—a crime rarely met with in this State.

It has been considered advisable to confer large and exceptional powers upon the Board of Health of the City of Charleston—which is necessarily interested in the preservation of its own trade and commerce as well as the health of its citizens; and is besides possessed of independent means to meet the cost of their protection.

In accordance with the recommendation of the Executive Committee, we earnestly pray your honorable body to increase the appropriation from $2000 to $3000, which latter sum *we* believe to be inadequate (as we have attempted to show in the body of this Report) to carry out fully and properly the requirements of State sanitation. The legislation of several of our sister States also sustain us in this opinion.

The several Bills, Papers and Essays which accompany this Report will commend themselves to the attention of the Legislature.

F. PEYRE PORCHER, M. D., *Chairman.*
B. W. TAYLOR, M. D.
J. A. ROBINSON, M. D.

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*In Michigan it is proposed to require a fee of $10 for lectures on this subject.

ANNUAL REPORT.

By Act of the General Assembly, approved December 23d, 1878, the South Carolina Medical Association is made the State Board of Health. All members of the Association are therefore members of, and are vested with the duties and responsibilities attached to the State Board of Health.

To the Executive Committee are delegated the duties of the Board, in the intervals of its meetings.

The Committee consists of seven members, appointed by the Governor on the recommendation of the Association, together with the Attorney-General and Comptroller-General of the State, who are members *ex-officio*.

EXECUTIVE COMMITTEE OF THE STATE BOARD OF HEALTH.

B. W. Taylor, M. D.,	Columbia,	S. C.
P. A. Wilhite, M. D.,	Anderson,	"
J. Ford Prioleau, M. D.,	Charleston,	"
T. Grange Simons, M. D.,	"	"
H. D. Fraser, M. D.,	"	"
F. F. Gary, M. D.,	Cokesbury,	"
J. R. Bratton, M. D.,	Yorkville,	"
Leroy F. Youmans, Att'y-Gen'l, (*ex-off.*,)	Columbia,	"
Gen. John Bratton, Compt-Gen'l,(")	"	"

B. W. Taylor, M. D., Chairman Executive Committee.
H. D. Fraser, M. D., Secretary.

Office of State Board of Health, Charleston, S. C.

STANDING COMMITTEES.

On Ordinances and Sanitary Code.—T. G. Simons, M. D., J. R. Bratton, M. D., Att'y-Gen'l L. F. Youmans.

Medical Topography.—F. F. Gary, M. D., J. R. Bratton, M. D., Compt-Gen'l John Bratton.

Endemic and Epidemic Diseases.—J. Ford Prioleau, M. D., B. W. Taylor, M. D., H. D. Fraser, M. D.

Quarantine.—T. G. Simons, M. D., Att'y-Gen'l L. F. Youmans, B. W. Taylor, M. D.

Registration of Vital Statistics.—H. D. Fraser, M. D., Compt-Gen'l John Bratton, P. A. Wilhite, M. D.

Finance.—H. D. Fraser, M. D., Compt-Gen'l John Bratton, T. G. Simons, M. D.

Adulteration of Food and Drink.—J. R. Bratton, M. D., T. G. Simons, M. D., F. F. Gary, M. D.

Sale of Drugs and Medicines.—J. Ford Prioleau, M. D., P. A. Wilhite, M. D., B. W. Taylor, M. D.

Sanitary Regulation of Schools.—B. W. Taylor, M. D., F. F. Gary, M. D., P. A. Wilhite, M. D.

Sanitary Condition of State Penal and Charitable Institutions.—P. A. Wilhite, M. D., Att'y-Gen'l L. F. Youmans, Compt-Gen'l John Bratton.

MEMBERS OF SUB-BOARDS OF HEALTH.

Abbeville County.

Abbeville—Drs. Wm. M. Taggart and Edwin Parker, and T. P. Quarles, Esq.

Cokesbury—Drs. F. F. Gary and B. C. Hart, and Professor Anton Berg.

Due West—Drs. J. L. Miller and E. H. Edwards, and Professor Wm. Hood.

Aiken County.

Aiken—Drs. W. H. Geddings and T. G. Croft, and J. B. Henderson, Esq.

Langley—Drs. J. M. Woodward and J. L. Lee, and H. W. Jordan, Esq.

ANDERSON COUNTY.

Anderson—Drs. W. H. Nardin and M. L. Sharpe, and John E. Breazeale, Esq.
Pendleton—Drs. Thos. F. Pickens and Paul H. E. Sloan, and T. S. Crayton, Esq.
Williamston—Drs. B. F. Brown and H. E. Epting, and C. E. Horton, Esq.

BARNWELL COUNTY.

Bamberg—Drs. L. A. Wright and J. F. Baggot, and J. S. Bamberg, Esq.
Barnwell—Drs. A. Patterson and J. J. O'Bannon, and A. P. Manville, Esq.
Blackville—Drs. L. C. Stephens and P. F. Stokes, and L. T. Izler, Esq.

BEAUFORT COUNTY.

Beaufort—The existing Local Board of Health.
Grahamville—Drs. Joseph Dewees and Chas. DuPont, and Col. Joseph Glover.
Port Royal—The existing Local Board of Health.

CHARLESTON COUNTY.

Charleston—The existing Municipal Board of Health.
Moultrieville—Drs. Alfred Raoul and ———, and John Cummins, Esq.
Mount Pleasant—Drs. ——— and John G. DuPré, and Frederick Horlbeck, Esq.
Summerville—Dr. Benj. Rhett and ———, and ———.

CHESTER COUNTY.

Chester—Drs. ——— and ———.

CHESTERFIELD COUNTY.

Cheraw—Drs. C. Kollock and J. K. McLean, and H. D. Malloy. Esq.

CLARENDON COUNTY.

Manning—Drs. S. C. C. Richardson and John J. Ingram, and G. Allen Huggins, Esq.

Summerton—Drs. B. M. Badger and J. L. Burgess, and P. G. Benbow, Esq.

COLETON COUNTY.

Walterboro'—Drs. Chas, Witsell and —— ———, and Carlos Tracy, Esq.

DARLINGTON COUNTY.

Darlington—Drs. B. C. Norment and W. A. Player, and J. F. Early, Esq.

Florence—Drs. J. W. King and James Evans, and W. J. Norris, Esq.

EDGEFIELD COUNTY.

Edgefield—Drs. J. W. Hill and Geo. W. Wise and, W. H. Brunson, Esq.

Graniteville— ——— ——— —— ——

FAIRFIELD COUNTY.

Winsboro'—Drs. T. T. Robertson, and R. B. Hanahan, and G. H. McMaster, Esq.

GEORGETOWN COUNTY.

Georgetown—Drs. T. P. Bailey and A. M. Forster, and W. O. Bourke, Esq.

GREENVILLE COUNTY.

Greenville—Drs. J. H. Dorrah and J. H. Maxwell and Thomas C. Gower, Esq.

HAMPTON COUNTY.

——— ——— —— ——— ——— ———

HORRY COUNTY

Conwayboro—Drs. Evan Norton and J. H. Grant, and Thomas W. Beaty, Esq.

KERSHAW COUNTY.

Camden—Drs. A. A. Moore, and——— and ———

LANCASTER COUNTY.

Lancaster—Drs. J. H. Foster and J. F. Mackey, and N. B. Chafee, Esq.

LAURENS COUNTY.

Laurensville—Drs. Irby Dunklin and Jno. A. Barksdale, and C. M. Miller, Esq.

LEXINGTON COUNTY.

Lexington—Drs. C. E. Leaphart and J. L. Shuler, and Walter Drafts, Esq.

MARION COUNTY.

Marion—Drs. J. L, Mullins and D. S. Price and W. B. McMillan, Esq.

MARLBORO COUNTY

Bennettsville—Drs. J. F. Jennings and J. L. Jordan and P. L. Breeden, Esq.

NEWBERRY COUNTY.

Newberry—Drs. James McIntosh and O. B. Mayer, Jr. and R. McCaughrin, Esq.

Prosperity—Drs. A. F. Langford and W. T. McFall, and W. A. Moseley, Esq.

OCONEE COUNTY.

Walhalla—Drs. L. B. Johnson and B. S. James and C. L. Reid, Esq.

ORANGEBURG COUNTY.

Orangeburg—Drs. A. S. Hydrick and M. G. Salley and J. J. Street, Esq.

PICKENS COUNTY.

Central—Drs. S. W. Clayton and J. M. Folger and Jno. R. Williams, Esq.

RICHLAND COUNTY.

Columbia—The existing Municipal Board of Health.

SPARTANBURG COUNTY.

Spartanburg—Drs. W. T. Russel and T. E Nott and J. J. Boyd, Esq.

SUMTER COUNTY.

Sumter—Drs. Jno. S. Hughson and J. C. Haynesworth and Col. J. H. Earle.

UNION COUNTY.

Union—Drs. Henry F. Beaty and Dr. Theo. Munro and M. F. Farr, Esq.

WILLIAMSBURG.

Kingstree— ——— ——— ——— ———

YORK COUNTY.

Yorkville—Drs. J. R. Bratton and A. J. Barron and Col. Wm. McCorkle.

Rockhill—Drs. T. A. Crawford and———and Capt. J. M. Ivy.

METEOROLOGICAL STATIONS AND OBSERVERS.

Aiken—Dr. W. H. Geddings, Observer.

Darlington—Dr. M. S. Iseman, Observer.

Newberry—Professor G. W. Holland, Observer.

Spartanburg—Dr. W. T. Russel, Observer.

REPORT OF CHAIRMAN EXECUTIVE COMMITTEE.

OFFICE OF THE STATE BOARD OF HEALTH,
COLUMBIA, S. C., October 31st, 1881.

To the Honorable the Senate and House of Representatives of the State of South Carolina:

The State Board of Health have the honor to transmit herewith their second annual report. In so doing we beg leave to acknowledge the courtesy and aid received from the State officers, and the kind consideration we have experienced at the hands of your honorable bodies.

We desire to call your attention to the several bills now under your consideration, and recommended by us, viz: A bill to establish a Sanitary Code: one for the Registration of Vital Statistics: and one for licensing the practice of Medicine and Surgery.

It is of great importance that these bills should be passed, as without them our field of usefulness will be much restricted.

CHARITABLE INSTITUTIONS.

The various charitable institutions of the State were duly inspected, and an account sent you of their condition, in our first annual report; there being no change in their management during the past year, we deem it unnecessary to again bring them to your notice.

QUARANTINE.

We have most carefully examined into the working of the present quarantine laws of the State and find much which needs revision and amendment. We have endeavored to explain it thoroughly in the accompanying papers so that you can fully appreciate our wants.

HEALTH OF THE STATE.

During the past year our State has been exempt from yellow fever. Scarlet fever has prevailed as an epidemic in Charleston, and caused many deaths, but fortunately in the remainder of the State there were but a few sporadic cases.

German measles has appeared over the greater part of the State in an epidemic form. For a full and complete history of these maladies we refer you to the within papers.

States never realize the necessity for State Boards of Health and sanitary regulations until visited by epidemics which carry off thousands of their inhabitants and cause a loss of millions of dollars by the suspension of trade.

This was most forcibly shown in the late epidemic in Tennessee; before its occurrence the State gave no appropriation for sanitation, and the then existing State Board of Health was but partially organized and without the means to work; when the fever appeared this Board was called into unexpected prominence, and its ability and true worth were clearly shown by its labors. Since then the State has given it ample funds and in every way has recognized its past services and the future good to the commonwealth which would arise from its continued work. To the remaining papers upon various sanitary topics we would most respectfully invite your attention as being of a nature to convey knowledge to every citizen who wishes to educate his family to perfect health.

SECRETARY'S REPORT.

The report of the Secretary exhibits the expenditures of the Board and asks for additional appropriations for Quarantine and other purposes, the necessity of which can be seen on examining the various papers. Should this be allowed we will enter upon our labors with renewed vigor, and trust the result of our work will show that the money expended on sanitation will in the end be amply repaid to the State.

All of which is respectfully submitted.

B. W. TAYLOR, M. D.,
Chairman State Board of Health.

THE SECRETARY'S REPORT TO THE EXECUTIVE COMMITTEE AT THE REGULAR QUARTERLY MEETING, OCTOBER 6TH, 1881.

Mr. Chairman:

By reference to the minutes it will be seen that during the present fiscal year six meetings of the Executive Committee have been held, viz:

A special meeting, by call of the Chairman, November 10th, 1880.

A regular quarterly meeting, January 5th, 1881.

A regular quarterly meeting, April 7th, 1881; and two special meetings, by call of the Chairman, June 14th, and August 2nd.

There not being a quorum present on the day appointed for the regular quarterly meeting of July no meeting was held.

The special meeting of November 10th, 1880, was called for the purpose of considering the report of the committee on the sanitary code, and to take action thereon, that it might be presented to the Legislature which was to meet at an early day.

The special meeting of May 10th, 1881, had for its object the consideration of matters relating to the State Quarantine, especially in its operation in the Harbor of Charleston, and to fill a vacancy in the Executive Committee and on the Harbor Commission, caused by the resignation of Dr. J. F. M. Geddings.

The special meeting of June 14th, was called to hear the report of the Committee on Quarantine which had been instructed to arrange for a conjoined meeting between that Committee and a similar one from the municipal Board of Health of the city of Charleston, with the view of harmonizing points at issue between the two Boards as to the conduct of the Quarantine at the port of Charleston.

The special meeting of August 2d, was called by the Chairman, at the instance of the Attorney General of the State, to discuss the propriety, in a legal point of view, of a plan which

was under consideration for the Board's availing itself of the United States Quarantine station at Sapelo Sound, on the Coast of Georgia, for vessels bound to the ports in this State, from infected or suspected localities, or from other causes subject to Quarantine—the National Board of Health having signified its consent to receive such craft at said station.

The importance of a rigid conduct of the State Quarantine, especially with reference to the port of Charleston, from the great interest involved, to the city, has naturally created intense anxiety on the part of its citizens for its maintainance, and hence has sprung a desire on the part of the municipal authorities to acquire control of the management of the Quarantine in their Harbor; and the consideration of a proposed transfer of their duties in this regard, to the city of Charleston, has consumed much of the time and attention of the Executive Committee, resulting in the expressed consent of the latter to relinquish, in favor of the city, the immediate control of their Quarantine—should the Legislature see fit to make the change.

At a previous meeting the subject of a general vaccination of the people of the State, was, in view of a threatened invasion of Small Pox, urged upon the Executive Committee by its Chairman in a very able report, and measures were at once instituted to carry this work into effect in as far as the limited appropriation of the committee, the prejudices of the people, and the non-existence of a compulsory law would permit.

In the spring, the secretary was instructed to procure a supply of virus for distribution to the sub-Boards of Health; this was done with as little delay as possible, and non-humanized virus in sufficient quantity, was obtained from Wisconsin to supply all the counties in the State, and was distributed along with a circular containing instructions for using it most effectively. Unfortunately, however, the season was too far advanced, and the presence of hot weather, rendering the lymph i neffective in a short time, caused the success of the undertaking to be limited. Of the extent of that success, I regret to say an estimate cannot be reached with any approach to accuracy inasmuch as only a very few of the sub-Boards have

heeded the call made for reports of their vaccinations, or of the number of their successful operations.

Of those who sent in their reports,

Dr. Jno. S. Hughson, Chairman of the sub-Board for Sumter, reports 417 vaccinations as far as he has been able to ascertain, reports from the physicians to do the work being very limited in numbers.

Dr. F. F. Gary, Chairman of the Cokesbury Sub-Board, reports that vaccination has been very generally performed, and with marked success.

Dr. T. P. Bailey, Chairman of the Georgetown Sub-Board, has been very active in vaccinating and in distributing the virus, the physicians of his county, with one exception, entering cheerfully into the work as proposed by the Executive Committee.

Dr. J. L. Miller, Chairman of the Due West (Abbeville County) Sub-Board, reports that vaccination was done to a limited extent in his district.

Dr. L. B. Johnson, of the Walhalla Sub-Board, reports 450 vaccinations.

Dr. T. T. Robertson, of the Winnsboro' Sub-Board, says that vaccination was performed generally among the school children.

A few other reports have been sent in, but in most of these cases the success was little or none, no disposition being exhibited by the people to accept the operation.

The following circular was prepared and sent to all of the Sub-Boards, in the expectation that, in compliance with the requirements of the law, a general response would be made. (See Act establishing the State Board of Health, Sec. VII.)

OFFICE STATE BOARD OF HEALTH,
CHARLESTON, S. C., July, 1881.

To the Chairman of the ——— Board of Health of ———:

DEAR SIR: The Act creating the State Board of Health makes it obligatory upon the Executive Committee to present an annual report to the Legislature, embodying such subjects as affect the public health of the State generally, together

with those that interest directly individual localities. This report, to be complete, must be based, in great measure, upon information furnished by the Local Boards of Health. You are, therefore, respectfully requested to forward to this office by the 15th of September a report of such matters as have borne upon the sanitary welfare of your Health District within the past year, comprising the occurrence of any endemic or epidemic, or of diseases of unusual severity, of climatic, local or foreign origin, with any unusual phenomena which may have marked their course, stating to what meteorological influences or local causes they may be attributable, what general means were employed to control their ravages, and with what success; also, what precautions, beyond the control of your Board, or what interference, requiring legislative enactments, is necessary, in your opinion, to ameliorate the sanitary condition of your district, or prevent the recurrence of such preventable diseases as have occurred from assignable causes, &c.

Your Board is furthermore earnestly invited to prepare a paper on some sanitary subject, to be presented to the next quarterly meeting of the Executive Committee, (early in October,) for publication (subject to the sense of the Committee), in the General Report to the Legislature, and with a view to general distribution.

Very respectfully,

HENRY D. FRASER, M. D.,

Secretary Executive Com. State Board of Health.

But twelve, of the forty-five Sub-Boards and Local Boards of Health, responded to the circular, and their reports have been turned over to the Chairman of the Committee on Endemic and Epidemic Diseases, and will no doubt be embodied in his report.

The preparation of a Register of the Physicians practicing in the State has been concluded, and it is believed to be as perfect as possible. Early in the canvass it was found impossible to make the registry of midwives and of those pretending to the title, save in the cities of Charleston and Columbia.

No effort has been spared by the Secretary to accomplish the assigned work, the result of which shows that there are eight hundred and sixty physicians practicing in the State.

The three Bills which were presented by the State Board of Health for enactment by the Legislature at its last session, passed one reading in the Senate and two in the lower House. These are, first, a Bill to declare what shall be deemed nuisances, injurious to health; second, a Bill to establish a uniform system of registration of births, deaths and marriages in South Carolina; and, third, a Bill to regulate the licensing of Physicians and Surgeons. Copies of these Bills have been sent to most of the Counties by the Secretary, with a circular requesting the Sub-Boards to impress upon their respective legislators the importance of them, and to urge them to assist in carrying them to their final passage.

Some valuable papers have been contributed by scientific gentlemen outside of the Board of Health, and our Chairman has been unflagging in his efforts to obtain a large and able contribution to the pages of our General Report to the Legislature.

In accordance with instructions from the Executive Committee, I have procured for the Board four sets of meteorological instruments, at a cost of three hundred and ten dollars. These instruments were purchased for the Board by the courteous and obliging officer at the head of the Signal Service Office in Washington, and were, at his suggestion, allowed to remain at that office to be tested. The four points at which stations for observation have been located are Aiken, Newberry, Darlington and Spartanburg. That at Aiken is under the charge of Dr. Wm. H. Geddings, that at Newberry under Professor W. G. Holland, that at Darlington under Dr. M. S. Iseman, and the one at Spartanburg under Dr. W. T. Russel. I have had blanks struck off, modeled mostly after those used in the Central Park (New York) Observatory, and by the United States Signal Office for the Health Department of the District of Columbia, to which have been added spaces for the registration of observations of items of local interest. It is hoped that by the 1st of November the

summary for October will be ready for distribution. I would respectfully call the attention of the members of the Board of Health to the fact that numerous exchanges, and papers of sanitary interest, are constantly arriving at the office of the Secretary, and are read by such members of the Board as reside in Charleston; a few have been sent to those who are more remote, but in order that they may be more extensively circulated, the Secretary will be glad to forward any of them by mail to those members at a distance who may desire them, to be returned as soon as read.

By instruction of the Chairman, I have, since our last meeting, subscribed to the "Sanitarian," a monthly periodical, published in New York, and devoted to the public health interest, and quite up to the times in its editorials and selections: the numbers for the present year have been added to our files.

Respectfully submitted,

HENRY D. FRASER, M. D.,
Secretary Ex. Com. S. B. H.

BY-LAWS

OF THE

EXECUTIVE COMMITTEE OF STATE BOARD OF HEALTH.

1. The officers of the State Board of Health shall consist of a Chairman, Vice-Chairman and Secretary.

2. The officers shall be elected by ballot at the first quarterly meeting in each year.

3. The duties of the Chairman shall be, to preside at all meetings, call extra meetings, when necessary, through the Secretary, draw all appropriations from the Comptroller General, and deposit the same in some bank in Charleston or Columbia, to the credit of the State Board of Health. He shall also make an annual report of the Executive Committee of the State Board of Health to the Legislature.

4. The Secretary shall keep a record of the transactions of the Board; shall have the custody of all books, papers, documents and other property belonging to the Board, which may be deposited in his office; shall conduct all correspondence with other State Boards of Health and with the Local Boards within the State; shall keep and file all reports and correspondence; shall certify to the correctness of all vouchers for expenditures; shall superintend all publications, give notice in writing of all meetings, and perform such other duties as the Board may from time to time direct. He shall receive for his services a salary of $500 per annum, to be paid quarterly.

5. Four members shall constitute a *quorum* for the transaction of business.

6. The meetings of the Board shall be quarterly, viz: On ——— in January, April, July and October, in the city of Columbia.

7. All bills for salaries and expenses shall be duly certified by the Secretary and approved by the President.

8. No money shall be expended unless the same has been authorized by the votes of the Board of Health.

9. STANDING COMMITTEES.

Ordinances and Sanitary Code.
Medical Topography.
Endemic and Epidemic Diseases.
Quarantine.
Registration of Vital Statistics.
Finance.
Adulteration of Food and drink.
Sale of Drugs and Medicines.
Sanitary condition of State Penal and Charitable Institutions.

10. The Chairman of each Standing Committee shall prepare a report annually or oftener, upon all matters considered by his Committee during the year, together with such suggestions as he may deem important, and submit the same to the Board on or before the meeting in October.

11. ORDER OF BUSINESS.

1. Calling the meeting to order.
2. Reading Minutes of last meeting.
3. Reading Notes of Correspondence.
4. Unfinished Business.
5. New Business.
6. Resolutions or Instructions to Standing Committees.
7. Reports of Committees.
8. Voluntary Communications.
9. Miscellaneous Business.
10. Adjournment.

12. The Meetings of the Board shall be conducted according to the Parliamentary Rules governing the Legislature of South Carolina.

13. Members in attendance on meetings shall be entitled to five dollars *per diem*, and mileage at the rate of five cents per mile, going and returning.

14. All papers presented for publication must be sent in at or before the meeting in October, and be read in open session and approved before they shall be published.

POWER AND DUTIES OF STANDING COMMITTEE ON QUARANTINE.

The Committee on Quarantine shall be charged with the general supervision of the conduct and administration of quarantine at the several ports of the State. They shall frame codes of rules and regulations for the same, to be approved of by the Executive Committee of the State Board of Health: However additional rules and regulations may be made by them should occasion require during the time intervening between the meetings of the Board. Such additional rules and regulations to be reported at the next meeting.

They shall report annually, or oftener, the condition of each station and its requirements, and shall propose such changes of statute or code of rules and regulations as they may deem expedient or desirable to render quarantine more efficient.

They shall have power to visit and inspect all stations, at all times; necessary expenses incurred by them by such visits to be paid by this Board.

REPORT OF THE STANDING COMMITTEE ON ENDEMIC AND EPIDEMIC DISEASES.

The Committee on Endemic and Epidemic Diseases would respectfully report that they have given their attention to the duties entrusted to them. So far as they can ascertain, the State has been in a healthy condition during the past year. The Committee have not learned of the existence of any epidemic, save in the City of Charleston, which was visited by the most severe and widespread one of Scarlatina. The Committee regret that they have suffered from much embarrassment on account of receiving so few reports from the Sub-Boards throughout the State upon which to base this report. It is only through such that the State Board can ascertain the sanitary condition of the different sections; but seven have been heard from, although the

Secretary of this body has directly communicated with them through circulars. These several reports of the Sub-Boards the Committee would specially recommend for publication in the general report of the Executive Committee.

The Committee would congratulate the Board upon the continued healthfulness of the State, and also upon the greater attention devoted to sanitary measures.

The reports received from the Sub-Boards are from—

T. J. Robertson, M. D., Chairman Sub-Board, Fairfield.

L. B. Johnson, M. D., Chairman Sub-Board, Walhalla.

F. F. Gary, M. D., Chairman Sub-Board for Cokesbury, Abbeville County.

L. C. Stephens, M. D., Chairman Sub-Board, Blackville.

T. P. Bailey, M. D., Chairman Sub-Board, Georgetown.

H. M. Stuart, M. D., Beaufort.

Jno. S. Hughson, M. D., Sumter.

J. L. Miller, M. D., Chairman Sub-Board for Due West, Abbeville County.

A. B. Patterson, M. D., Chairman Sub-Board for Barnwell C. H.

B. C. Norment, M. D., Chairman of the Sub-Board for Darlington.

Respectfully submitted,

J. FORD PRIOLEAU, *Chairman.*

REPORT OF COMMITTEE ON ADULTERATION OF FOOD AND DRINK.

MARS BLUFF, S. C., April 1st, 1881.

Dr. B. W. Taylor, Columbia, S. C.:

DEAR SIR: I enclose report of Committee on "Adulteration of Food and Drink." If not present at the meeting of the Board, I would suggest some such resolution as the enclosed draft be sent to each of our Congressmen.

It is quite probable that measures will be introduced at next session of the Congress for the suppression of the adulteration

of food and drink, and I hope of drugs also. These measures usually fail from indifference or want of information on the part of Congressmen. If each of the State Boards of Health were to solicit the attention and support of their respective members of Congress, it would be moving all along the line, and excite interest in sanitary aims and measures.

Yours, very truly,

JAMES F. PEARCE.

Dr. B. W. Taylor, Chairman S. B. H.:

The Committee on the "Adulteration of Food and Drink" beg leave to submit the following report:

It is a cause for great thankfulness, and the country at large is to be congratulated on the fact, that there is so little adulteration of the *staple* articles of food in the United States. The increasing interest in State medicine on the part of the people, and the activity of the State Boards of Health, in the States where they have been established, encourages the hope that their present purity will be preserved, and the alarming tendency to adulteration be effectually checked.

That there is extensive adulteration of poisonous character in groceries, prepared ostensibly for immediate use, such as ground coffee and self-raising flour, as well as confectionery, pickles, &c., there can be no doubt; and it is deemed necessary to call attention to the adulteration of a few articles.

Flour is adulterated in preparation by the use of alum to give whiteness and a fine appearance to bread. Alum is also used in making a great number of baking powders on the market.

Leibig, writing of the property of alum to whiten bread, gives the opinion that the alumina unites with the soluble phosphates of the flour, making insoluble phosphates, thereby losing the good effect of phosphorus on the system. Attention is especially called to the use of alum in baking powders, as it is ten times as cheap as cream of tartar, the least objectionable and most available source of aerating bread with soda.

The adulteration of confectionery is simply appalling. In some cheap candies it is estimated that they contain not more than twenty-five per cent. of sugar. The most common adulterant being Kaolin, which is bought and used by the ton.

Two parcels of candy, known as "sugar plums," were purchased at different country stores. Several "plums" of each parcel were dissolved in hot water, or rather the gum and sugar were dissolved, the clear fluid decanted, and this process repeated several times. The insoluble remainder was dried and heated to a white heat on a spatula. It was white and earthy in look and feel, gave no reaction to acetic, muriatic, nitric or sulphuric acids.

The insoluble constituents of one "plum" weighed thirty grains. What the effect of so much earth on the stomach is, or will be, is an open question; it is in all probability the same as that produced by the pernicious habit of eating dirt, so common among the Southern negroes.

Attention is again called to the adulteration of milk, and the great danger of the spread of contagious and infectious diseases by its contamination. It may be contaminated by washing the milk vessels in water containing Typhoid fever germs, or by diluting the milk with water containing such germs. Indeed, there have been well authenticated instances where Typhoid fever and Scarlatina have been spread by the milkman having those diseases in his family, or simply acting as a nurse in such cases, the milk, by virtue of its great absorbing powers, taking up the germs of disease and bearing them to families served by the milkman.

Because of this power of absorption, milk is easily spoiled by carelessness in keeping the dairy and cleansing the milk vessels, or by using the milk house for storing other articles such as kerosene oil, vegetables, fish, or any thing liable to decay.

Milk, under such circumstances, yields poor butter, and is unfit for general use, and as a nutrient for the sick is dangerous. The writer becomes more and more convinced, by observation and reading the experience of others on this subject, that many children die yearly from this cause. The de-

votion of physician and nurse are unavailing with such a diet.

Milk for infants and children should come from a healthy cow, a pure dairy, and should be kept in a pure atmosphere, free from noisome odors; if kept in an apartment with other articles of food, or in the room of the sick, it should be in a tightly stopped bottle.

One tablespoonful of lime water to the pint of milk is a preservative, and increases its digestibility.

Pure milk is life-giving, delicious, pure as its own whiteness—contaminated, it becomes the bearer of the seeds of disease and death.

Bread has been represented as the "staff of life;" adulterated, it is indeed a broken staff.

Pure, unadulterated food is, physically considered, life and health; adulterated food is ill health, disease and premature death.

Health is the poor man's capital; without health, the rich man's gold is a vain show.

In conclusion, we would urge the necessity of seeking both State and National legislative action for the suppression of the adulteration of food and drink.

The continued analyses, and additions to the long list of adulterated articles, really accomplish nothing, as those who are likely to be influenced by such information are already convinced of the prevalence of the evil.

The National government has made appropriations for the investigation of the enemy of the cotton plant; Pleuro pneumonia, the enemy of cattle, is to be stamped out by legislalative action; The hog, in his troubles, finds Congressional friends: surely, *man's* interests are as important as those of swine.

The most forcible of all reasons for legislation to suppress the adulteration of food and drink, as well as for other sanitary measures, is the fact, "that one-fourth of the entire death rate is from preventable diseases or causes."

Resolved, That our Members of Congress be requested to give their earnest attention and support to any just measures

that may be brought before Congress for the suppression of adulteration of food and drink, or any other legislation relating to sanitation.

Resolved, Secondly, that the Secretary send a copy of this resolution to each of our Members of Congress.

Respectfully submitted,

J. F. PEARCE, M. D.,
Chairman Committee.

REPORT OF SUB-BOARDS.

Report of Chairman of Sub-Board of Health, Fairfield, S. C., T. T. Robertson, M. D.

In reporting upon the sanitary condition of Fairfield County, it is safe to say, that it is as good as any portion of the State. It lies between the Broad and Wateree Rivers, extending from one to the other; hilly and intersected by many small streams. The only disease that can be properly called endemic, is malarial fever, in its various forms—Intermittent, Remittent and Continued.

This latter term "Malarial continued," (introduced by Dr. Maury,) is a very appropriate one, better perhaps, than "Typho-Malarial. What malaria really is, is still an unsettled question, and if ever settled, must be done by the chemist or the microscopist.

We know that solar heat, moisture and decaying vegetable matter, are necessary to its production; so as long as the sun shines, we in our latitude will have malaria.

These fevers (malarial,) prevail to some extent in some sections, but not in all, every summer and fall. Up to this time (September 14th,) there has been much less than usual, owing no doubt to the unprecedentally dry season. The cases are rarely fatal if treated early. The laity have learned to treat it almost as well as the doctors; quinine or some of its substitutes being the chief reliance. The great

trouble is the tendency to relapse; and here arises the question as to the *modus operandi* of the quinine. Is it an antidote? Does it destroy the poison or eliminate it? If so, how account for the relapse when the patient is removed entirely from the malarious region. If the poison of malaria be a vegetable organism, as supposed by some, and claimed to be proven by Dr. Saulsbury, may not the quinine arrest its growth or development without destroying it? May not the spores of the *ague plant* lie dormant in the system for a length ot time under the influence of the quinine, and when this subsides, go on to full development again, producing fever as before? These are questions more easily asked than answered. But science is on the rampage, and what may we not learn!

As to epidemics, there have been none save Catarrhal. Under this head may be classed Influenza, Diarrhœa and Dysentery; all of which have occasionally prevailed; none serious, except, perhaps, infantile diarrhœa, during the summer months. The real cause of catarrhal epidemics is yet to be discovered, all the books to the contrary, notwithstanding. The ozone theory is not satisfactory; neither is the electricial, the thermometrical, the hygrometrical nor the barometrical. The theory of organisms (germ theory,) may yet develop something more satisfactory as to cause, but doubtful as to treatment, except it be, not to treat at all.

There have been some cases of Diphtheria, but not epidemic, except in one locality, the Doco or Blythewood neighborhood. This disease, as usual, has baffled the skill of the physicians, a large proportion of the cases dying. So much has been written upon this disease of late years, and such conflicting opinions as to its etiology, pathology and treatment, that it is calculated to make one skeptical as to any treatment. Some boast of curing hundreds of cases without losing one, while others with the same treatment will lose a majority. Does this not prove that it is not the treatment that cures? As to the cause of Diphtheria we still have to plead ignorance. Perhaps the germ theorists may eventually solve the problem.

A few cases of scarlet fever have been reported recently, but nothing of an epidemic.

Vaccination has been practised recently under instructions from the State Board of Health; principally in the Public Schools. Vaccination will never become general, unless it is made compulsory by law, and this is one thing that should engage the attention of the Legislature.

In the absence of legislation, perhaps the importation of a few cases of small pox into each county, would be a good sanitary move. Vaccination would then become pretty general.

There is a Local Board of Health in Winnsboro, appointed by the Town Council. This Board has been vigilant in the discharge of its duties, and whether the good health of the town is attributable to this fact or not, the writer will not undertake to say.

The question is frequently asked whether the increase of the negro population is greater or less than before emancipation. The writer is of opinion that it is greater; one fact is observable in regard to this case, viz: That Pulmonary Consumption is becoming more common than during slavery. As to the cause, the writer is not yet prepared to give an opinion.

The disease is in most cases, probably some form of Pneumonia, either neglected or improperly treated, as many of this race suffer for want of timely medical treatment. Would it not be wise and humane for the Legislature to make some appropriation and some provision for medical attendance on the poor who are not in the poor-houses. There are a great many of this class who suffer and die for want of proper medical attention, and it cannot be expected that physicians can do such an amount of gratuitous practice as is now required.

This is a question that should engage the serious attention of the Legislature.

It is to be hoped that bills now before the Legislature, submitted by the State Board of Health, will pass at the ensuing session. The subjects embraced in these bills, it is true, are such as to invite but little attention in the generality of legis-

lators; but the Sub-boards in the different counties, it is to be hoped, will exert their influence in getting their members interested in the subject.

T. T. ROBERTSON, M. D.,
Chairman of Sub-Board of Health of Fairfield.

REPORT OF SUB-BOARD OF HEALTH, WALHALLA, S. C., L. B. JOHNSON, M. D.

WALHALLA, S. C., September 6th, 1881.

Henry D. Fraser, M. D., Secretary Executive Committee State Board of Health, Charleston, S. C.:

SIR: In response to your circular of July, I would say in reference to Hygienic measures, that the law should be positive as to one point; Sub-boards of Health should have full power to enforce any order that they might give, otherwise all their efforts will be ineffective, for instance—there is scarcely a time when the carcass of a dead animal cannot be found within the limits of a country town; the Board of Health will demand its removal, and yet if this offensive and disease engendering mass happens not to lie in front of one of the magnates of the town, there is nothing done, and all the Board of Health can now do is to have it removed at its own expense.

One other thing, there should be a strict law in regard to selling the meat of dead animals; lard and tallow from the same; milk sick butter and diseased chickens; this is an occurrence that is much more common than people who live in a city are aware of. It is a common occurrence for people to discover that "the disease," is among their chickens, and immediately the whole crop of chickens are cooped, sent to the village, sold to the village merchant, and he in turn forwards them to market, (mostly to Charleston;) parties so offending should be confined in the Penitentiary for at least twenty-five years; persons who will thus trifle with the lives of their fellow-men should be so

confined that they can't repeat their offenses. I have no doubt but that much of the sickness that baffles the skill of the city doctors, originates from milk sickness in beef and butter. What is the difference in poisoning your wells and cisterns of water, and placing poisoned meats and butter on your tables.

We appreciate the efforts of the State Board to correct the many existing evils in the State, and at the same time admit, that it will take many years of arduous work and toil *on the part of a few*, to bring this important matter to an approximation of perfectness. Hoping that you may be able to accomplish much good by enactments during the sitting of the General Assembly.

I am most respectfully,

L. B. JOHNSON,
Chairman Sub-Board of Health for Walhalla.

REPORT OF THE SUB-BOARD OF HEALTH OF COKESBURY, S. C., FOR THE YEAR 1881.

COKESBURY, S. C.

Dr. H. D. Fraser, Secretary of S. B. of H.:

SIR: In compliance with the requirements of the Executive Committee of the State Board of Health of South Carolina, the Sub-Board of Cokesbury, Abbeville County, S. C., respectfully report:

During the year the barometic, thermometic and hygrometic conditions of the atmosphere has been extreme and variable. The Winter and Spring were unusually cold and wet, and the Summer dry and hot, winds variable, but mostly from the West. Diseases of the respiratory system, as well as rheumatism, were more prevalent than usual. The only epidemics we note were influenza, measles, roseola

and mumps, with here and there an isolated case of diphtheria, and much sore throat. During the hot months dysentery and diarrhœa prevailed extensively all over the county. Later in the season we had some cases of typhoid fever, remittent, and intermittent fever. Chronic malarial toxæmia is a prolific source of disease, and from this cause we find various nervous diseases. Although the profession differ widely in their opinion as to the nature of the poison known as "Malaria," there is one point upon which all are agreed, viz: "That a very moist sub-soil, with a surface soil exposed to high temperature and rapid evaporation, is the most congenial for its development, and that it may spring from meadows, from the clearing of forests, from reservoirs, lakes, ponds, sluggish streams, and from turning up the soil." The question, then, for us to consider is, whether we can modify its effects? Experiment has demonstrated the fact that *we can modify*, if not wholy eradicate the poison. Proper drainage and under-draining our low lands, removing obstructions from water courses, straightening the winding and tortuous course of streams, has been found sufficient. We, in view of these facts, urgently demand the passage of a suitable drainage Act by the Legislature, and hope and believe the Executive Committee of the State Board of Health will, in their next report, bring this matter to the attention of the Legislature. It is known that the country around Ninety-Six has suffered from malaria as much as any other in the State. A few years ago the physicians prevailed upon the town authorities to ditch and drain the water courses near the town. Since this work was completed malarious diseases have almost totally disappeared. This County, from the number of water courses within its bounds, especially demands the enactment of such a law.

The Sub-Board of Cokesbury was supplied with vaccine in May, and we report that the majority of the inhabitants have been properly vaccinated.

We conclude this report by congratulating the Executive Committee of the State Board of Health for their zeal and activity in all matters pertaining to the public health, and to

the increased interest in such subjects by the people, and recommend a more general diffusion of their reports and transactions among the people at large.

All of which is respectfully submitted.

F. F. GARY,
ANTON BERG,
B. C. HART,

REPORT OF SUB-BOARD OF BLACKVILLE, S. C.

BLACKVILLE, S. C., September 10, 1881.

To the Executive Committee of the State Board of Health:

GENTLEMEN: In accordance with your request, I take this opportunity of making my annual report of the sanitary condition of this Health District:

There have been no morbific influences operating in this district producing an epidemic, which could in any way be controlled by health boards. In June dysentery prevailed to a considerable extent, which was no doubt attributable to the evaporations from the swamp bottoms, which had been overflowed by the large waterfall in the early Spring, succeeded by a prevailing and almost unprecedented drouth in the Summer. These morbific emanations produced congestion and torpor of the nervous centers and chylopoietic viscera, and consequent perversion of functions, which resulted in the disease mentioned. With this exception (which of course could not have been reached by any action on our part) our district has been remarkably exempt from all diseases having a local origin, which will account for the meagerness of our report.

Very respectfully submitted,

L. C. STEPHENS, M. D.,
Chairman Blackville Sub-Board.

REPORT OF SUB-BOARD OF GEORGETOWN.

GEORGETOWN, S. C., Sept. 6th, 1881.

H. D. Fraser, M. D.:

DEAR SIR: In compliance with the request of the Executive Committee of the State Board of Health, I beg leave to state that there has been no epidemic here for the past year, and we have been remarkably exempt from any contagious disease. As late as the month of June two cases of scarlatina of a most violent and malignant grade occurred in one family, and were traced to communication with Charleston. There has been an unusual prevalence of catarrhal diseases, with some severe forms of bronchitis, during the past winter, and but few cases of pneumonia, compared with the winter before. From the topography of this part of the country, as may well be surmised, our malarial fevers are generally endemic, but from observation of many years, their prevalence does not seem to be any more marked than in the cotton belts of country removed from the rice region. I think some of the severest forms of malarial fevers that I have met with were traced to the cotton lands of the upper portion of Williamsburg County. The impress of malaria is observed in many of our diseases, and there is scarcely any perturbation of the system but what this impression is awakened. During the months of March and April we notice a few cases of remittent and intermittent fevers, which may be styled our vernal fevers, and they seemed to be confined more to children. These cases are usually among parties residing here, and I regard their malarial origin as dating from the Autumn previous. Perhaps, contrary to the preconceptions of many, I might safely say, that May, June, July, and a great portion of August are the healthiest of the hot months, with a remarkable exemption from our miasmatic diseases. September and October are essentially our malarial months, and as we approach frost our fevers are more malignant and intractable. Up to this writing we are unusually exempt. The most dangerous form of fever is what is denominated hemorrhagic

malarial fever, the pathology of which, I presume, is still *sub judice*, but the disease is, alas! but too familiar to many of the profession. I find these cases usually terminate fatally, or otherwise, in from two to ten days, generally within a week. I have seen a case terminate in thirty (30) hours. I have never known a case to exist except in one who has had previous invasions of intermittent fever and in subjects who are anaemic and in a general cachectic condition.

I am glad to state that much more interest has been manifested in the sanitation of the town, and our Local Board of Health has been unusually active. Georgetown being of peninsular form, with rice fields on either side, of course we are liable to the emanations from the same. If the place could be raised to commercial importance, and railroad connection with the interior established, these would be submitted to a thorough drainage, and adapted to dry culture, and the health of the town would be manifestly promoted thereby. With rice culture almost at our doors, and it being the interest of the land owners to carry on the same, it is next to an impossibility for us to escape malarial influences.

Respectfully yours,

T. P. BAILEY, M. D.

REPORT OF SUB-BOARD, BEAUFORT, S. C.

BEAUFORT, S. C., Sept. 12th, 1881.

Henry D. Fraser, M. D., Scc. Ex. Com. S. B. H.:

DEAR SIR:—As the time has almost expired for the handing in of papers from the several Boards of Health, in answer to your circular of July, I would beg leave to say, that I have nothing of importance to communicate in regard to the health of Beaufort. Owing to the low condition of our wells and cisterns—for a few weeks during the drouth—we had rather more dysentery than usual. The cases, however, were very mild, yielding readily to treatment, and entirely disappearing

when our water supply was freshened by the rain. With the exception of this, I really have nothing to report.

We are very particular in regard to our sanitary arrangements. No earth is allowed to be turned up after the 1st June, at which time we begin distributing disinfectants. Our open drains are regularly supplied with quick lime; the low places in the streets and yards are treated in the same way. The vaults and damp cellars are supplied liberally with chloride of lime and a solution of carbolic acid and copperas. Since the storm, we have been particular in having all debris removed, and a very large quantity of the above disinfectants distributed.

The Town Couneil co-operate readily with the Board of Health, and carry out any and every suggestion made to them. Up to date, our Town has been perfectly healthy.

Regretting that we will not be able to prepare a paper as suggested.

I remain yours, very respectfully,

H. M. STUART, M. D.,

Chairman Board Health, Beaufort, S. C.

REPORT OF SUB-BOARD OF SUMTER, S. C.

SUMTER, S. C., Sept. 6th, 1881.

Dr. Henry D. Fraser, Sec. State Board Health:

DEAR DOCTOR:—Sumter, during the past year, has been free from epidemics of all kinds. During the month of May, we had, owing doubtless to climatic influences, the usual amount of bowel affections, for the most part dysentery; the type however, was mild and easily managed. There has been very little malarial fever—no typhoid cases, and altogether Sumter has enjoyed a year of unprecedented health.

The Town is well drained and its sanitary condition well attended to.

Respectfully,

JOHN S. HUGHSON,

Chairman.

REPORT OF SUB-BOARD FOR DUE WEST, ABBEVILLE COUNTY.

DUE WEST, ABBEVILLE COUNTY, Sept. 17th, 1881.

H. D. Fraser, M. D., Secretary Executive Committee State Board Health, Charlestou, S. C.

DEAR SIR :—In compliance with instructions issued by the Executive Committee of the State Board of Health, we beg leave to make the following annual report.:

At the outset we are pleased to say that the past year has been characterized for the uniform enjoyment of health and exemption from disease by our population, with one exception. During the latter part of last summer, fall and early winter months, our village and surrounding country was visited with that fearful epidemic, viz : diphtheria.

Although it prevailed generally, territorially considered, yet I may say but few families were affected and with some fatality. The usual remedies popular with the profession were used with average success, but in some cases apparently with little or no control over the march of the disease to its fatal termination. In the last ten days it has again appeared in our vicinity; the future alone will determine its prevalence and virulence.

With this exception, neither endemics nor epidemics have prevailed in our midst ; nor have we been afflicted with the usual number of sporadic cases. In explanation of this fact, we would ascribe the uniformly cold winter, followed by unprecedented drought during spring and summer. During the present year vaccine virus has been procured and applied to some of our population unprotected. We would beg leave to call attention of your Board to one fact that is very palpable to the profession as well as the laity, viz : the great increase and prevalence of consumption in our colored people since the war. Under the old "*regime*" this disease was almost unknown, now it has become exceedingly common.

Personally, I know one family that has lost five sisters in

the last eight or ten years, their ages would run from twenty to forty-five years. In another family four sisters have died, all married and have borne several children.

Still another family, out of which have died two brothers, between twenty-five and thirty years of age, a sister in the same family now in the last stages of the disease. We are led to enquire why this great change?

These facts should stimulate us to investigate and seek a true solution.

We are disposed to think that not one but a combination of causes, enter as important factors in the production of this stubborn, and in the main, fatal, disease.

We would mention poor houses, insufficient clothing, irregular hours, scanty and inappropriate food. Upon the latter cause we would place the greatest stress.

Facts above given may lead to further enquiry and investigation of a subject involving the welfare and prosperity of a numerous class of our population.

Very respectfully, &c

J. L. MILLER,

Chairman Sub-Board Health of Due West, S. C.

REPORT OF SUB-BOARD OF HEALTH FOR BARNWELL.

BARNWELL, S. C., Sept. 1, 1881.

Henry D. Fraser, M. D., Secretary Executive Committee State Board Health.

DEAR SIR: In reply to your communication of July —, would say that the Sub-Board of Health of Barnwell, met according to directions, and beg leave to report that the sanitary condition of Barnwell is good. We have had no endemics or epidemics, save a mild form of diarrhœa, which prevailed during the spring. This locality has been unusually healthy. We also call your attention to the importance of

the registering by physicians of all deaths occurring under their treatment and the causes thereof, and that the Legislature be petitioned to create an Act enforcing the same.

I am very respectfully,

A. B. PATTERSON, M. D.,

Chairman of the Sub-Board of Health of Barnwell.

REPORT OF THE SECRETARY OF THE SUB-BOARD OF HEALTH OF AIKEN.

AIKEN, S. C., SEPT., 19th, 1881.

Henry D. Fraser, M. D., Sec. Executive Com. State Board of Health.

DEAR SIR:—In reply to your circular of July, 1881, making inquiries in regard to the sanitary condition of the Health District for the past year, I have to say that there is very little to report of special interest to your Board, and with the exception of an epidemic of measles during the winter and spring months, and an epidemic of bowel trouble during the late spring and summer months, we have had an unusally healthy year.

The epidemic of measles was unusually mild in form, resembling "Rotheln" or German measles in many cases, and therefore there were very few deaths reported from it. No efforts were made to arrest the disease, as of course it is impossible to isolate the negro cases.

The epidemic of bowel trouble was very severe, usually commencing with diarrhœa, and many cases terminating in severe dysentery is causing many deaths among children and old persons, to whom it seemed to have a decided liking.

Do not know the cause, unless due to excessive heat at that season.

There were only two cases of Scarlatina reported up to date.

The cause of the first could not clearly be made out, but was probably communicated by letters. It was certainly not

of local origin, and was prevented from spreading by prompt and rigid isolation of the patient. The second was very probably also imported and did not spread.

During the winter season, we had many cases of pneumonia—more than we have had in years past. Many of the cases were fatal, caused perhaps by the very severe winter we were having.

Some few cases of diphtheria were reported, in a very severe form, but were confined to the few families in which it originated, and did not become epidemic.

We would respectfully call your attention to the fact, that the town authorities have lately built a large cistern in the centre of the business street of the place, which is filled from the surface drainage. During the warm weather, the engine during practice throws this water into the air. Would this not be a fruitful source of disease? In other respects our town is in a very good sanitary condition, and we have nothing to complain of.

Yours, respectfully,

T. G. CROFT, M. D.

REPORT OF SUB-BOARD OF HEALTH FOR SUMTER.

SUMTER, S. C., SEPT. 16th, 1881.

Dr. H. D. Fraser, Secty. Ex. Com. State Board of Health.

DEAR DOCTOR: It seems hard to get physicians in the country to take interest in vaccinating.

I have vaccinated three hundred and one (301), giving to the work over ten hours of my time. I vaccinated from 25 to 30 in an hour. Dr. Pringle in the country has vaccinated 110. Other physicians have done nothing. One reports an indisposition on the part of the people to be vaccinated. Another reports "*none* vaccinated," though will probably vaccinate a good many later when the weather gets cool. I

supplied him with vaccine three months ago. Another has not yet reported. I doubt if he has done anything.

In appointing physicians in the different portions of the country, I selected those who I thought would take most interest in the matter, but you see the result, so I can only report 417 vaccinated; 310 by myself and 107 by others as mentioned above.

Very truly yours,

JNO. S. HUGHSON, M. D.

Chairman Board of Health, Sumter, S. C.

PROPOSED ACT FOR PRESERVATION OF PUBLIC HEALTH.

Suggestion in the form of an Act, submitted to the Executive Committee of the State Board of Health, for the preservation of the public health; and for the better defining the duties of the Sub-Boards, respectfully submitted by J. Ford Prioleau, M. D., Chairman of the Committee on Endemic and Epidemic Diseases.

Mr. Chairman and gentlemen of the State Board of Health:

GENTLEMEN: I have been requested by your Board, as Chairman of the Committee on Endemic and Epidemic Diseases, to prepare a plan by which the sanitary condition of the State can be improved, and also the duties of the Sub-Boards, be more clearly defined. In reflecting upon the matter, I do not see how this can be effected, unless some radical changes are made in the enactments, which, at present, govern such matters.

I therefore submit the matter to you with the suggestion, that the plan proposed be printed in the forthcoming annual report of your Board, and that at the meeting of the Legislature of the State, in the year 1882–83, it be memorialized to take such action as they may deem fit to still further organize the Sub-Boards within the State, and to define their duties. I suggest this delay, so that every portion of the State can have an opportunity of ascertaining what proposed modifica-

tions are desired, and that each part may know how it will be acted upon, and that they may recommend amendments.

The suggestions made have been in a great part derived from "An Act for the Preservation of the Public Health of the State of New York; Amendment in 1881, chapter 431, Session Laws." The suggestions being thrown in this form to exhibit what has been enacted in other States, for the purpose of facilitating business, to invite discussion and amendments, and to present to Sub-Boards what may reasonbly be expected of them. It will be seen that only cities, towns and villages will be affected by the proposed Act, the condition of the country remaining for future consideration.

PROPOSED ACT REGULATING SUB-BOARDS.

SEC. 1. It shall be the duty of the Common Council of every city in this State, except in the cities of Charleston, Columbia, Beaufort, Spartanburg, Greenville, Georgetown, etc., and those cities, towns and villages which already have an organized Board of Health, which are hereby excepted from the operation of this Act, to appoint a Board of Health for such city, to consist of six persons who are not members of said Council, and who shall be appointed as follows: Two persons for a term of one year; two persons for a term of two years, and two persons for a term of three years; (one of whom at least, shall be a competent physician.) The Mayor of such city shall be a member *ex-officio* of such Board of Health, and shall be president thereof. The said Board of Health, when duly organized, shall appoint a competent physician, (not a member of such Board,) who shall be Health Officer for such city. This section shall not be construed to remove any of the existing Boards of Health in any of the cities of this State, but the successors of such Boards shall be appointed as this section provides, except those cities as aforesaid mentioned. Upon the expiration of the term of office of any member of the Board of Health, appointed as herein provided, his successor shall be appointed by such Common Council for the term of three years, and the said Common Council shall also have

power to fill any vacancy caused in such Board of Health by the death, resignation, or removal from the city of any member thereof. And it shall be the duty of every Intendant, or highest executive officer, and Board of Council of every incorporated village of this State, in which there is not now a Board of Health duly organized, to appoint once in each year, a Board of Health for such village, to consist of not less than three, nor more than seven persons, who are not in the Council, who shall hold office for one year, or until their successors shall have been appointed, from which Board shall be elected a president and secretary ; and the said Board of Health thus constituted, shall appoint a competent physician to be the Health Officer of such village, who shall not be a member of said Board of Health.

SEC. 2. The supervisors and justices of the peace and the town clerk, or a majority of them, of each town in this State, together with a citizen of each town, of full age, to be selected by them, shall be the Board of Health for such town each year, and they shall appoint some competent physician not a member of said Board, to be the Health Officer for such town. They shall have cognizance of the causes of injury or danger to the public health, and shall meet upon the call of the Supervisor. Also, whenever in the judgment of the Executive Committee of the State Board of Health, or (if the said Board is not in session,) of the Chairman and Secretary thereof, if it shall be necessary, and the public good require it. The Supervisor of such town upon reasonable notice being given him by the Executive Committee of the State Board of Health, or its Chairman and Secretary, shall immediately convene the Town Board of Health, by notice to the members thereof, to take such proceedings as the public health in that vicinity may require, and concerning which it shall have been notified by the Executive Committee of the State Board of Health, or its Chairman and Secretary. And in any case in which the term for which the Board of Health of any village or city heretofore appointed shall have expired, or in any case in which a member, or several members of a Board of Health of any town, village, or city in this State shall resign or cease to

act officially, so that less than the statutory number of members of said Board continue to be members thereof, then it shall be the duty of the county judge of the county in which such town, village or city is situated, or of an adjacent county, upon being satisfied that such term has expired, or that such vacancy or vacancies exist, to appoint in writing a competent citizen or citizens, as the case shall require to fill such vacancy or vacancies and to perform the duties of said office within the time specified, and until the said town, village or municipal government shall have elected or appointed the member or members, who shall, according to law, perform such official duties in the said Board of Health. The written appointment to a Board of Health, made by a county judge under this Section, shall forthwith be filed in the office of the Clerk of the County in which the said Board is located. Any violation of the provisions of this Section or of any lawful instruction of said Board of Health, shall be a misdemeanor.

SEC. 3. The several Boards of Health now organized in any city, village or town in this State, (except in the cities of Charleston, Columbia, Beaufort, Spartanburg, Greenville, Georgetown, etc., and those towns and villages which already have an organized Board of Health,) and the several Boards of Health constituted under this Act, shall have power, and it shall be their duty:

(1.) To meet in their respective cities, villages or towns, and fix and determine the period of quarantine to which boats navigating inland streams, vehicles or persons arriving in such city village or town, shall be subject; but the said Board shall have power, after an examination, to reduce the period of quarantine of such boats, vehicles or persons, if they deem it safe to do so, subject to the advisory and supervisory action of the Executive Committee of the State Board of Health and the Executive officer of State.

(2.) To prescribe the duties and powers of the Health officer; to direct him from time to time in the performance thereof, and to fix the compensation he shall receive.

(3.) To make orders and regulations in their discussion concerning the place and mode of quarantine, the examina-

tion of and purification of boats, and other craft not under quarantine, the treatment of boats, articles or persons thereof; the regulation of intercourse with infected places; the apprehension, separation and treatment of emigrants, and other persons who shall have been exposed to any infectious or contagious disease; the suppression of and removal of nuisances, and all such orders and regulations as they shall think necessary and proper for the preservation of the public health, subject to the advisory and supervisory action of the Executive Committee of the State Board of Health, and the Executive officer of the State,

(4.) To regulate and prohibit, or prevent all communication or intercourse with all houses, tenements, and places, and persons occupying the same, in which there shall be any person who shall have been exposed to any infectious or contagious diseases.

(5.) Such Boards of Health shall have power, and it shall be its duty to receive and examine into the nature of complaints made by any of the inhabitants concerning cases of danger or injury to the public health within the limits of its jurisdiction, also to report to the Executive Committee of the State Board of Health, promptly, facts which relate to infectious and epidemic diseases within said jurisdiction, and to require such isolation and quarantine of boats, persons and sources of infection as shall be in its judgment necessary. Also to release from such isolation or quarantine such persons, boats and things as it shall deem safe so to release; but upon ordering such quarantining or isolation, or such release from the same, said Board and its health officers shall make a record of the facts in the case and of the reasons for the action taken. It shall also be the duty of the said local Board to procure suitable places for the reception of persons and things infected with malignant, contagious or infectious diseases, and in all cases where sick persons cannot otherwise be provided for, to procure for them medical and other attendance and necessaries; and it shall be the duty of every such Board of Health to take cognizance of, and report every case of small pox or varioloid occurring within said Board's

jurisdiction; also to make all needful provisions for immediately obtaining the necessary means for thorough and safe vaccination of all persons within the said jurisdiction who may need the same. It shall be the duty of the Board of Health in each town, village and city in this State to have the supervision of the registration of deaths, disease, and the causes of deaths, and by its appointed officers to examine all certificates and records of death and findings of Coroner's Juries, and to designate the persons who shall grant permits for the burial of the dead, and to prescribe sanitary regulations for such burials, and it shall be the duty of every such Board of Health to supervise and make complete the registration of births, deaths and marriages within the limits of its jurisdiction, and in so completing the said registration the cost thereof shall be a charge upon such town, village or city, and shall not exceed fifty cents for each completely verified and registered record of a birth, death or marriage; but the town clerk, or the registering clerks provided by law in villages and cities, may still keep all records of births, deaths and marriages as required elsewhere.

(6.) To publish from time to time all such orders and regulations of general obligation as they shall have made, in such manner as to secure early and full publicity thereto, and to make, without publication thereof, such orders and regulations in special or individual cases, not of general application, as they may see fit, concerning the suppression and removal of nuisances, and concerning all other matters in their judgment detrimental to the public health, and to serve copies thereof upon any occupant or occupants of any premises whereon any such nuisances or other matters aforesaid shall exist, or by posting the same in some conspicuous place on such premises.

(7.) To issue warrants to any constable of their respective cities, villages or towns; to apprehend and remove such persons as cannot otherwise be subjected to the orders and regulations by them adopted, and whenever it shall be necessary to do so, to issue their warrants to the Sheriff of their respective counties to bring to their aid the powers of the

county, all which warrants shall be forthwith executed by the officers to whom they shall be directed, who shall possess the like powers and be subject to the like duties in the execution thereof, as if the same had been duly issued out of any Court of record in this State.

(8.) To employ all such persons as shall be necessary to enable them to carry into effect the orders or regulations they shall have adopted, published and made, and the powers vested in them by this Act, and to fix their compensation,

(9.) To impose penalties for the violation of or non-compliance with their orders and regulations, and to maintain actions in any Court of record to collect such penalties, not exceeding one hundred dollars in any one case, or to restrain by injunction such violations, or otherwise to enforce such orders and regulations.

SEC. 4. Every person who shall wilfully violate or refuse to obey any order or regulation so made and published, or any order so made and served, or posted as aforesaid, shall be deemed guilty of a misdemeanor, and on conviction thereof, shall be subject to fine or imprisonment, or both, in the discretion of the Court, such fine not to exceed one thousand dollars, nor such imprisonment ten years. And in any case of non-compliance with any order or regulation which shall have been so served or posted, as printed in subdivision six of section three of this Act, the said Board or its servants or employees may lawfully enter upon any premises to which such order or regulation relates, and suppress or remove the nuisance or other matters in the judgment of said Board detrimental to the public health, mentioned in such order or regulation, and any other nuisance or matters of the description aforesaid from these existing; and the expense thereof shall be a charge upon the occupant or any or all the occupants of said premises, and may be sued for and recovered with cost by said Board in the name of the said board in any Court having jurisdiction. Whenever execution on any judgment so obtained shall have been returned wholly or in part unsatisfied, said judgment, for the amount so unsatisfied, shall be a lien upon said premises, having preference over all

other liens or incumbrances whatsoever. But in order to acquire such lien, such judgment, if in a Court not of record, shall, first have been docketed in the same place and manner as by law now required to make judgments in such Courts liens upon real estate. And whenever any lien upon any premises shall have become fixed as aforesaid, the said Board may cause the said premises to be sold at public auction, for a term of time, for the payment and satisfaction of such lien, and the expenses of such sale, giving notice of such sale for twelve weeks, successively, once in each week, in one or more newspapers published in the city, incorporated village or town, or the county of the town in which said village, town, or city may be situated, where the premises are situated, as the case may be; or if no newspaper be published in such county, then in the newspapers published nearest said premises; and also sending a copy of such notice of sale personally on the owner, or agent of said premises, if known, and a resident of said city, village or town, at least fourteen days previous to such sale, or by depositing the same in the post office directed to such owner or agent at his place of residence, if known, or the nearest post office thereto, at least twenty-eight days previous to such sale. And the said premises shall be sold to the person who shall offer to take the same for the shortest time, paying the amount remaining unpaid, upon such judgment, with interest, and the expenses of such notice and sale. A certificate of such sale signed by the Chairman, and countersigned by the secretary of such Board shall thereupon be made and delivered to the purchaser, and may be recorded in like manner and with like effect as deeds of conveyance of lands, and thereupon the purchaser, his heirs or assigns shall be entitled to the possession of said premises, so sold as aforesaid, and if unoccupied may immediately enter, and if occupied may have remedy against any occupant by action or by summary proceedings, as against a tenant holding over after expiration of his term; and in case the cost of such action or proceeding shall not be collected by such purchaser of the defendant therein, the same shall be a lien upon said premises, having the like preference, as the lien

aforesaid, and the term of the said purchaser shall be extended during a time bearing the same proportion to the original term as the amount of such cost bears to the amount paid by such purchaser, on such sale. And such term shall commence when such purchaser shall have acquired possession. At any time after such sale, and within six months after the recording of such certificates as aforesaid, the owner or any lienor on incumbrancer of such premises, or of any part thereof, may redeem by paying to the purchaser the amount paid by him on such sale, and all costs and expenses he may have incurred in any action on proceeding as aforesaid to obtain possession, with ten per cent. interest thereon. If such redemption be made by the owners, the right of the purchaser shall be extinguished, and if such lienor or incumbrancer, the amount paid by him to redeem shall be added to his lien or incumbrance, or if he have more than one, to the oldest, and shall thenceforth partake of the nature thereof and be collectable by any remedy adapted thereto.

SEC. 5. All expenses incurred by the several Boards of Health in the execution and performance of the duties imposed by this Act shall be a charge only on their respective cities, villages and towns, and shall be audited, levied, collected and paid in the same manner as other city, village and town charges are audited, levied, collected and paid.

SEC. 6. Whenever any pestilence, or infectious or contagious diseases shall exist in any County Poor House in this State, or in the vicinity of any such County Poor House, and the Physician of said County Poor House shall certify that such pestilence or disease is likely to endanger the health of the persons at such Poor House, the Superintendent of such County Poor House, shall have power to cause the persons supported at such Poor House, or any of them, to be removed to such other suitable place in the same County as shall be designated by the Board of Health of the city, town or village within which such Poor House shall be, there to be maintained and provided for at the expense of the County, with all necessary medical care and attendance, until they shall be safely

returned to the County Poor House from which they were taken or otherwise discharged.

SEC. 7. In any instance in which there is a legally organized Board of Health in an incorporated village, which comprises parts of several towns, or less than a whole town, such Boards of Health shall have full authority, in regard to all matters relating to public health within said village, and such village which has its own organized Board of Health, shall not be subject to the sanitary regulations or Health Officers of the township or towns within which such village is located; nor shall the taxable property of any such village, while maintaining its own Board of Health be subject to taxation for maintaining any town Board of Health, or for any expenditures authorized by such town Boards; but such expenditures of the town Board of Health shall be assessed and collected exclusively on property in the town outside of said village.

SEC. 8. All Acts and parts of Acts inconsistent with this Act are hereby repealed.

All of which is respectfully submitted for your consideration.

J. FORD PRIOLEAU, M. D.,
Chairman Committee on Endemic and Epidemic Diseases.

REPORT OF COMMITTEE ON QUARANTINE, BY T. GRANGE SIMONS, M. D., CHAIRMAN.

In presenting the Annual Report of the Committee on Quarantine, the Chairman of that Committee approaches this duty with some misgivings, as the results of his experience have not been of an agreeable nature; yet he will try and lay before the Board some of the attainments of his observations and experience.

The Quarantine Laws of this State are in a strange condition, so as to render most of them of no value as protecting the great interests of the seaports of the Commonwealth. The Act of 1879 virtually abrogates most of the other laws of

administration of quarantine, and leaves this grave responsibility to the dictates of the Health Officer, and at no two ports is there any uniformity as to procedure, or in any one of them is there any Code of Government as to rules of detention, disinfection and other means of purification of vessels even from infected and suspected latitudes or ports.

The subject of fees and charges has been a source of great complaint and objection, in fact a master arriving at any of our ports had to submit to any procedure that the Health Officer imposes, as no printed copy of Statutes has been furnished him, as required by law. The enforcement of hygienic and sanitary precautions is conducted with the same disregard to the importance of such measures to protect the lives and prosperity of the communities.

What is needed is a uniform Code to be pursued in all cases at each port in our State; This Code to be explicit as to measures to be carried out in the process of disinfection, fumigation, detention, disposal of ballast from infected or suspected ports, so that no germs or other assigned or suspected cause of disease could be liberated in any one of the ports. Fees to be arranged by Statute, and to go to the formation of a quarantine fund for each port, to be used for equipment of station, disinfectants, repairs to boats, buildings and other contingencies; each year would improve the appearance of the station, and render the officials and employees more comfortable. The Health Officers to be paid fixed salaries, and better provision made to render their positions comfortable. Reports of all receipts and expenditures to be rendered by them in reports from the stations quarterly. The Code of Procedure for Quarantine to be in conformity with the National Board of Health Rules and Regulations, with such additional measures as our Southern ports require to exempt them from imported disease. The Rules and Regulations of the National Board having been adopted by the State Board, we want now to have a proper Code to control all stations. This will ensure prompt and efficient service, and as little obstruction to commerce as is compatible with safety.

The necessity of disinfecting and fumigating all vessels from

latitudes usually liable to yellow fever, is dwelt upon by all sanitarians, and in conformity to suggestion from the National Board, who, in a recent bulletin, warn all quarantine offices of the dangerous condition of all West India ports, where small-pox and yellow fever both prevail to a great degree. Also, many Mexican and South American ports have a very unenviable reputation as to the careless administration of laws in regard to the issue of bills of health that can be bought without any inspection of the vessel. The flagrant violations of this sort have been recently noticed, and Southern ports warned to be extra cautious as to admission to *pratique* of vessels from these ports. The case of the United States steamer " Plymouth " should be remembered as to how long infection remains pent up; This vessel, essentially under good police regulations, and clean to all intents and purposes, after a long cold winter, so that the bilges remained frozen for a long time, is put in commission, and yellow fever re-appears after one hundred and fifteen days from last case. Upon inspection decayed wood, and a defective slop sink that allowed an accumulation of decaying organic material was found near the parts of the vessel that the disease was noticed, and emanations from these are supposed to have intensified the yellow fever poison that lay dormant for such length of time.

No merchant vessels are ever kept as clean as those of the navy, and their construction is frequently such that the detritus and deposit that gravitates to the bottom of the bilge water is retained between the timbers. The bilges may be pumped and washed out until the water flows from the pumps clear and odorless, yet this mass remains to ferment anew; This condition of affairs can be detected only after all ballast is discharged, and the limber planks ripped up and this deposit washed out with force pump and section of hose.

Ballast of sand or of porous stone from all ports liable to infectious or contagious diseases should never be deposited on shore at any season, no matter how cold. Dormant germs or other supposed causes of disease may give rise to pestilence under proper telluric and atmospheric conditions during the

summer months. Whether or not yellow fever is imported or originates on our shores is not to be discussed here, but the strict observance of proper sanitary and hygienic measures at all our seaports is our duty.

Your Committee have drawn up a bill to be presented to the Legislature which it is hoped will meet the exigencies of all the ports; it is in harmony with the National Code ; I trust that it will meet your approval. I have written several times to the Health Officers and others whose opinions I had every reason to think were entitled to confidence, and a general distrust exists as to our entire system of quarantine. The United States Congress passed, June 2d, 1879, an Act to prevent the introduction of contagious and infectious diseases into the United States, which makes it a penal offence for vessels from infected or suspected ports to enter any port, or to violate any State Board of Health rules and regulations, under penalty of fine not to exceed $1,000, which shall be a lien upon the vessel, to be recovered in the United States District Court. Also, a fine of $500 is imposed for any master of vessel failing to procure a bill of health from the consular office of the United States at port of departure.

Also, several points as Quarantine Stations under National control are designated, so that vessels coming under the provisions of the said Act will have a safe refuge to go to, where all attention can be bestowed upon the sick, and proper measures instituted to purify the vessel and cargo by the most approved methods, conducted by skilled and competent officers, so that but little delay will be made before the vessel resumes her voyage to port of original destination. Blackbeard's Island, Sapelo Sound, on the coast of Georgia, is the place designated for vessels bound to the ports of Florida. Georgia and South Carolina. By action of this Board, on August 22d, we accepted the use of this station, and, in accordance with this action, issued postal cards to pilots and others at each port in South Carolina, ordering vessels with disease on board, or on which disease had occurred in port of departure or during voyage, to proceed to Sapelo. Pilots were ordered not to board in such cases.

Some difference of opinion was expressed as to the terms, "infectious or contagious disease," so that when more cards were needed, I used the full names of such diseases as were considered under the above terms by the National Board rules, viz: Yellow and Typhus Fever, Small Pox and Cholera. I trust that this Board will join with several other State Boards, and express to Congress the great need of these National Quarantine Stations, and request a large appropriation to equip them fully. It will save the State and Municipal Boards large outlays, and secure immunity from imported diseases.

I would also state that after the issue of the order of the Board in regard to Sapelo, I wrote to the efficient and courteous Secretary of the National Board, Dr. Thos. J. Turner, U. S. N., and requested that vessels bound for our ports should be informed of the order, and if they incurred its provision to go direct to Sapelo. The Executive Committee acted on this suggestion and the National Health Bulletin, of August 13th, contained our order, and a notice to Consular offices, instructing them to send all vessels coming under the order to Sapelo on their way to our ports.

Another matter of import to Quarantine officials at all ports, is a rule that has not attracted sufficient notice, it is one of the rules of the Revenue Service requiring masters of vessels to enter their vessels at the Custom House in person, prior to breaking bulk of cargo, or discharging ballast. Under Quarantine laws, both National and State, vessels cannot be declared "*in pratique*," by the Quarantine officers, until ballast and cargo has been discharged, and no one must leave the vessel or communicate with her during her Quarantine. I have requested an opinion in regard to this from the Executive Committee of the National Board.

Under the terms of agreement at the conference held May 28th last, between the Quarantine Committee of the State and Municipal Boards of Health of Charleston, the State Board is pledged to the following:

1st. To recommend that the appointment of the Health officer for Charleston, be made by the Governor, upon the

nomination of the Municipal Board of Health of Charleston.

2d. That the city be reimbursed for the amount spent in maintaining the guard boat in the summers of 1880 and 1881.

I have endeavored to become conversant with all matters in regard to the conduct and administration of the several stations, and have kept up quite a correspondence with the Health officers at the stations; at all of these there is much to be done to render them even effective. The difficulties encountered by the Health officers as to equipment of stations and other matters will be dwelt on in detail as I take up each station; at all much is required; at none is the system or administration in accordance with safety to the ports they are intended to protect.

I have made diligent inquiry into the management of the Quarantine at the ports of New York, Boston, Philadelphia, Norfolk, New Orleans, Wilmington, N. C., Savannah, Brunswick, Ga., the Texas seaports, Mobile, Key West and other cities; all are in advance of us, and there is no stint of money on the part of the State to secure proper enforcement of the laws. At all of them the Local Municipal authorities conduct the administration under the supervision of the State Board of Health or State Executive; fees and charges go to the support of Quarantine. Officers have a fixed salary paid by the State, or out of the Quarantine Fund.

I would suggest that the Statutes in regard to rules and regulations of Quarantine Tables of Fees and charges be printed, and that the Health officers be charged with the proper distribution of them, and that all pilots be required to exhibit them to Masters of all vessels boarded by them inward bound, off, or at the several ports of the State.

CHARLESTON HARBOR.

The quarantine anchorage lies south and east of Fort Johnson, on James Island.

The Boarding Station and Health Officer's residence is at Fort Johnson. A large warehouse for reception of cargoes, is also built near the site of the old wharf, and where the new

wharf will be built. The Lazzaretto buildings are located on a long promontory running southeast from Fort Johnson. These consist of a Fever Hospital, a Small Pox Hospital, and Keeper's house; they are all well built and well furnished. This was done by the Commission appointed by the Legislature in——. The work was completed and the buildings turned over to the Harbor Commission, who have sent a report of them to this Board, as under the decision of the Attorney-General they have no jurisdiction over them.

A house for the separation of well passengers and crews should be built. During the recent storm of August 27th and 28th, several vessels arrived in port in distress, from ports that compelled them to undergo quarantine detention. Great hardships were endured by the crew of several of them having on board crews of wrecks; women and men had to be crowded into the new and unused small pox hospital to give them shelter. A proper house could be located sufficiently remote, that would insure comfort to those who are well, but who must be detained.

In December, 1879, the National Board of Health appropriated $12,000 to build a wharf at this station. Nothing was done until last summer, when a few piles (9) were driven, and the work ceased. I wrote to the secretary of the National Board, and requested to be informed as to the cause of the delay, and when the work would be finished. He replied promptly, stating that he had telegraphed Major Green, U. S. Engineer in charge at Charleston Harbor, and who would inform me. Since then, I learn that the work has been recommenced under contract with the Messrs. Pregnall, well known ship builders and contractors. It will be 335 feet long, and built of the patent creosoted piles.

The necessity of having the wharf completed is urgent, and its absence felt greatly, as no vessel can discharge cargo or ballast, and the municipal authorities have declined to allow the approach to the wharves of the city of any vessel liable to Quarantine. They have designated Wappoo Mills as the point for discharge of ballast, but this place has many objections to its use, as it is but a short distance from the city, and

the employees are in constant communication with the city, passing over and near the ballast deposits to land at or near the Mills.

The absence of the wharf caused much of the dissension between the Mayor and Board of Health and the Health Officer, and resulted in the Mayor's proclamation of April 26th, forbidding the approach to the wharves of any vessel from quarantine, without written permission from him; also several vessels have been ordered away to undergo a second disinfection and fumigation, as the ballast had not been discharged prior to their being declared *in pratique* by the Health Officer. The State Board, at a special meeting, held May 10th, to consider his condition of affairs, after hearing a letter from Hon. Wm. A. Courtenay, Mayor of Charleston, requested a conference between the Quarantine Committees of the State and Local Boards of Health. At this meeting, it was conclusively shown that the cause for complaint was well founded, and the Municipal Board requested that they be allowed to place a guard boat at the Station, to be under the control of the Health Officer, and that prior to the discharge of a vessel, she be subject to their inspection before she be allowed to come up to the city. The State Board had already expended a large portion of their appropriation, in guarding the British Brig Zulu, that arrived in March with small pox on board. The State had made no appropriation to keep up the guard boat, so the offer was accepted at the conference, and subsequently approved of by the Executive Committee of the State Board, June 13th.

The guard boat is essential to a proper enforcement at this Station, otherwise smuggling is rendered easy; and prior to the establishment of this guard boat, no measures had been instituted to prevent violation of quarantine precincts. The boarding crew of two negro men, being the only residents of the Station at night. The appearance of small pox in the city shortly after the arrival of the Zulu, caused strong suspicion to rest upon its being brought from quarantine ground. A diligent inquiry and long correspondence with the Health Officer, failed to elicit the fact of such violations of quaran-

tine as the cause ; yet the presence of a responsible guard at all times is essential to maintain quarantine.

It is hoped that the City Council will be reimbursed for the outlay incurred by placing the guard boat at so critical a period. We are pledged to make this recommendation to the Governor and Legislature.

The various objections urged against the conduct of quarantine, as to the absence of all printed information as to State Statutes and Codes of Regulations, Tables of fees and charges that are shown at all other ports except in this State, have given much cause for dissatisfaction on the part of masters and consignees, especially during the time of enforcement of the dual quarantine proclaimed by the Mayor. I trust that this will never have cause to be repeated. Your committee are confident, that under the proposed Act to be presented to the Legislature, harmony and security will result.

The necessity of the Local Board having the administration in large sea ports has been recognized, and this right has been conferred upon them. All other cities on the whole Atlantic and Gulf coast are allowed to protect themselves. The Board of Health of Charleston is composed of gentlemen selected for business sagacity and eminence in conducting personal affairs, by which they have all attained prominence in the community. The medical members are all too well known to this Board, for me to introduce them the improved sanitary measures instituted by them and now being advanced are an evidence of their great interest in the welfare of the city. We ask that means be appropriated to protect the commercial centres of this State.

The sum required to maintain a proper guard boat, pay salaries and equip the Station, is $2,000 ; every dollar of this will be expended as is intended, and the State will reap the benefit. My relations with this Board have been of an intimate nature, and I vouch for their zeal and efficiency, and earnestly hope that the control suggested will meet the approval of this Board and of the Legislature.

I also present to your consideration, two communications

from the Board of Harbor Commissioners. One relates to the recently constructed quarantine buildings and contents, as turned over to the Harbor Commissioners by the Commissioners appointed by the Legislature to select a site and construct these buildings. Under an opinion furnished by the Attorney-General the Board of Commissioners do not consider they have jurisdiction over these buildings. The other is from the Health Officer, to the Harbor Commissioners, requesting information as to shelter and support of well passengers and crews at the Quarantine Station. I have already alluded to the need of buildings for this purpose.

ST. HELENA ENTRANCE.

This important station controls the shipping bound for the large phosphate establishments at Coosaw, Pacific Landing, and Oak Point Mines. The great and increasing demand for phosphates has brought these points in constant communication with all parts of the world, and great care should be exercised to maintain a proper and efficient quarantine at this port. The large expanse of water, and the bold navigable streams, render it, with Port Royal, difficult to ensure a proper compliance with the rules and regulations of those in charge. The station is located on Buzzard Island, in Bull River, two and a half miles from the anchorage for inspection. The point designated for vessels infected is at Marsh Island, three miles below this point. A small room for the Health Officer, and one for his three boat hands are all the buildings that constitute the station. The wharf was destroyed in the gale of August 27th and 28th last. A suitable building should be erected for the accommodation of the sick. Ballast is dumped at low water mark at Bull River. At Coosaw it is thrown in the marsh, one mile away from the works. I cannot agree with the Health Officer in charge, Dr. M. M. Sams, who informs me that he has only had occasion to disinfect and fumigate two vessels in two years. Both of them had disease prior to arrival—one, small-pox; the other, yellow fever. The only procedure he has made use of was pumping the bilges dry. No examination of limbers is made. He states that his

idea was that a vessel with a clean bill of health, even from infected or suspected latitudes, if she had no disease during passage, need not be disinfected or fumigated. This is not in accord with the generally accepted rule, that all vessels from suspected or infected ports should be disinfected thoroughly, all ballast discharged, limbers examined, bilges scrubbed out, all decaying wood scraped and fumigated with sulphur, prior to pratique being given.

Dr. Sams expresses his desire to conform to all proper regulations, but did not consider this necessary.

I would suggest that the legal fees at this port go to the quarantine fund, to be collected and disbursed by the Health Officer, he to report to this Board all receipts and expenditures. This Board to establish a Code for the conduct of the several stations in accordance with the Rules of the National Board of Health. Also, that we recommend the salary of the Health Officer be $800 a year, with the allowance of $150 for boat crew. As the fees will hardly rebuild the wharf, this should be restored.

PORT ROYAL HARBOR.

The locality of the station is yet not fully established. By Act of the Legislature in 1879, a commission was created to select and locate a site for the building of suitable Quarantine, Hospitals, Residence and anchorage site, and $5,000 was appropriated. The first selected spot, Land's End on the S.W. point of St. Helena Island, was agreed upon as the most suitable, but this could not be secured on account of some legal barrier in the way of proper titles. Paris Island has been more recently selected. It is situated 8 miles from Beaufort and 4 miles from Port Royal. As the buildings are already contracted for, it is hoped that before another season we will have a properly appointed station. The Commissioners only intend to build the necessary houses for the Health Officer and his boarding crew at present. The anchorage is safe and commodious. The same condition of affairs exists here as at St. Helena, a lack of organized rules and methods, or any information as to fees and charges. No disinfectants or

fumigating agents are kept on hand. The reason given for not using them, "that it would take two days to get them from Savannah or Charleston." The close proximity to Savannah and Charleston renders this station a point of great importance. The same suggestions made for St. Helena will be recommended here. The station is under the charge of Dr. John A. Johnson who expresses the desire for instruction from the State Board as to his duties.

GEORGETOWN HARBOR.

The Boarding Sation is located on North Island, about twelve miles below the town, at the entrance to Winyah Bay. The station needs everything to make the Quarantine effective to protect the port. There are not even Buoys placed to designate the anchorage. A house should be built for the Health Officer, I would recommend the appointment by the Legislature of a Commission to locate and equip the station in a proper manner. The Health Officer is Dr. W. I. Magill, who has discharged his duties with zeal and efficiency as far as he has been able with the limited means at his disposal.

ACT SUGGESTED BY COMMITTEE ON QUARANTINE, TO RENDER MORE EFFICIENT THE QUARANTINE SERVICE OF THE SEVERAL PORTS OF THE STATE.

Be it enacted by the Senate and the House of Representatives of the State of South Carolina, now met and sitting in General Assembly and by the authority of the same.

SECTION I. That for the more certain prevention of the introduction of disease into the several ports of this State, every vessel arriving from a foreign port, or from a suspected or infected port of the United States, shall immediately proceed to the Quarantine station of the port of arrival and display a yellow flag, or the vessel's ensign in the

rigging, and shall be visited by the Quarantine Officer, between sunrise and sunset, as soon as possible after such arrival.

SEC. II. All vessels which have had infectious or contagious disease on board during the voyage, or while in the port of departure, and also all vessels from infected or suspected latitudes or ports shall be subjected to a detention of not less than (5) five days or for such longer time as the constituted Health authorities at the port of arrival may deem requisite; and pratique shall not be given to any such vessel until such vessel shall have been thoroughly disinfected and fumigated, the cargo and ballast having been first discharged.

SEC. III. All masters of vessels or other persons violating any of the provisions of this Act or disobeying any of the published regulations of the Health authorities of any port, and all persons whomsoever, who shall, without permission of said authorities, invade the quarantine grounds and station of such port, or who shall hold any communication or attempt to hold any communication with any vessel or any officer or any passenger or member of the crew of any vessel lying at the quarantine or under control of the said authorities, shall be guilty of a misdemeanor, and upon conviction shall be punished by fine not exceeding $2,000, or by imprisonment not exceeding (12) twelve months or both, in the discretion of the Court.

SEC. IV. The following uniform schedule of charges is hereby adopted for quarantine dues at all ports of the State. The amounts collected to be expended for the more effective enforcement of quarantine at each port, to wit:

For every vessel	boarded and inspected	$ 5 00
" " "	of 100 tons or less, fumigating and disinfecting, each process	15 00
" " "	over 100 tons and less than 250 tons, fumigating and disinfecting, each process	20 00
" " "	over 250 tons and less than 500 tons, fumigating and disinfecting, each process	30 00

For every vessel	over 500 tons and less than 750 tons, fumigating and disinfecting, each process	40 00
" " "	over 750 tons and less than 1,000 tons, fumigating and disinfecting, each process	50 00
" " "	over 1,000 tons and less than 1,250 tons, fumigating and disinfecting, each process	60 00
" " "	over 1,250 tons, fumigating and disinfecting, according to tonnage of vessel, each process . . . 70 to	100 00

In all cases the quarantine officer shall collect the charges made against vessels before giving permission to leave quarantine, either by Captains draft on Consignee or in currency and shall return the same to the Board charged with the administration of quarantine at such port, who shall be responsible for the disbursement of the same.

SEC. V. That the administration of quarantine of the port of Charleston shall be in charge of the Board of Health of the City of Charleston, subject to the advice and supervision of the Executive Committee of the State Board of Health, and they shall have full power and authority to make such rules and regulations for the institution and enforcement of quarantine as they may deem expedient and as may be conformable to law.

SEC. VI. The quarantine officer of the port of Charleston shall be appointed by the Governor on the nomination of the Board of Health of the City of Charleston. He shall be invested with all powers and authority heretofore by law conferred upon the Health Officer of the port of Charleston, and he shall exercise such power and authority under the direction and control of the said Board of Health of the City of Charleston. He shall receive a salary from said of $1,000, and he shall reside at the quarantine station. He shall be appointed during the month of January of each year and hold his office for one year unless sooner removed by the Gover-

nor at the request of the Board of Health of the City of Charleston.

SEC. VII. That for the purpose of carrying out the provisions of this Act with regard to the port of Charleston, the sum of $2,000 be annually appropriated, to be paid by the State Treasurer on the order of the Chairman of the Board of Health of Charleston.

SEC. VIII. That the ports of the State which are not specifically provided for in this Act shall remain under the supervision and control of the Executive Committee of the State Board of Health. A quarantine officer shall be appointed at each of the said ports, who shall be vested with the powers and authority heretofore by law conferred upon the Health Officer, and shall exercise the same under the direction and control of the Executive Committee of the State Board of Health, or such Local Board as the Executive Committee of the State Board of Health may appoint for that purpose. He shall return to said Executive Committee or to said Local Board all fees collected by him, and shall receive for his services annually the following, to wit:

Quarantine officer at port of Georgetown, $500, and $150 for boat hire.

Quarantine officer at St. Helena Entrance, $800, and $150 for boat hire.

Quarantine officer at Port Royal, $800, and $150 for boat hire.

He shall be appointed by the Governor on the recommendation of the Executive Committee of the State Board of Health, during the month of January of each year, and shall hold his office for one year, unless sooner removed by the Governor at the request of the Executive Committee of the State Board of Health, and shall reside at the Quarantine Station.

SEC. IX. That all Acts and parts of Acts inconsistent with this Act be and the same are hereby repealed.

THE STATE BOARD OF HEALTH.

The following is a summary of the Statute laws now of force on the following subjects.—Prepared by C. A. McHugh, of the Charleston Bar, to wit:

I.—Act Creating the State Board of Health.
II.—Quarantine.
III.—Practice of Medicine, Physicians, etc.
IV.—Apothecaries.
V.—Dentists.
VI.—Lunatics, and Proceedings Therein.

I.—OF THE STATE BOARD OF HEALTH.

The State Board of Health was created by Act of the General Assembly, approved 23d December, 1878. The Board is composed of the South Carolina Medical Association (whose charter is renewed by this Act, and continued for the space of fourteen years) in their corporate capacity, together with the Attorney-General and Comptroller-General of the State.

The duties and powers of the Board are defined by said Act, as follows:

Sec. 3. That the said South Carolina Medical Association, with the State officers above named, are hereby invested with all the rights and charged with all the duties pertaining to organizations of like character, and said Board of Health, so constituted and established, shall be the sole adviser of the State in all questions involving the protection of the public health within its limits; and it shall be the duty of the said Board to make an annual report to the Legislature on all matters relating to its action.

Sec. 4. That the said Association at its first meeting succeeding the passage of this Act, and every seven years there-

after, shall select seven members to be recommended to the Governor, who shall appoint them to co-operate with the State officers above named, to constitute an Executive Committee having power to act in the intervals of the meetings of the State Board of Health. This Committee shall make annually a detailed report to the State Board of Health. Members of this Committee shall be removable at the pleasure of the Governor, by him, at the request of the State Board of Health, or for neglect of duty or other causes set forth by the majority of the members of the Executive Committee. Vacancies shall be filled by appointment by the Governor on recommendation of the State Board of Health or of the Executive Committee, when such vacancies occur in the intervals of the meetings of the association.

SEC. 5. That this Executive Committee shall, immediately after their appointment, proceed to organize by electing a Chairman and Secretary, the latter to be *ex-officio* Registrar-General of the State; that they be authorized and empowered to divide the State into health districts, and in those districts in which no Local Boards of Health exist, they be required to appoint sub-boards of health, which shall consist of two practicing physicians and one layman. In all cases where Local Boards of Health have already been established, these shall be subject to the supervisory and advisory control of the State Board of Health through its Executive Committee. They shall pass no ordinances nor consider any such of force as are repugnant to the rules and regulations of the State Board of Health.

SEC. 6. That it shall be the duty of the State Board of Health, through its Executive Committee, to investigate the causes, character and means of preventing such epidemic and endemic diseases as the State is liable to suffer from; the influence of climate, location, occupations, habits, drainage, scavengering, water supply, heating and ventilation; and shall make inspections annually, or oftener if necessary, of the sanitary condition of all institutions provided as State charities or supported at the public expense.

SEC. 7. That the Sub-Boards constituted as provided in

Section 5, and Local Boards of Health already organized, are charged with the duty of investigating within their districts, all matters of sanitary interest or scientific importance, bearing in any wise upon the protection of the public health, and shall report to the Executive Committee at such times and in such manner and form as the Executive Committee may prescribe.

SEC. 8. The State Board of Health shall supervise and control the quarantine system of this State, and shall annually, or oftener if necessary, require reports from the Health Officer, in such forms as may be prescribed, in all matters pertaining to quarantine. They shall also be authorized to establish quarantine both by land and sea. This quarantine shall not be established except by the advice and consent of the Governor.

SEC. 9. That it shall be the duty of the Executive Committee of the State Board of Health, to recommend such provisions of law as shall be deemed necessary, for the thorough organization of a system of registration of vital statistics throughout the State, and shall prepare the necessary methods and forms for obtaining and preserving such statistics.

SEC. 10. For the purpose of carrying out the provisions of this Act, the sum of two thousand dollars be, and the same is hereby appropriated, to be paid by the Treasurer, on the order of the Chairman of the Executive Committee, countersigned by the Comptroller-General.

SEC. 11. This Act shall take effect from the date of its passage, and all Acts and parts of Acts inconsistent herewith be, and the same are hereby repealed.

16 Statutes at Large, p. 729.

II.—LAWS OF FORCE REGARDING QUARANTINE.

AND HEREIN OF HARBOR COMMISSION OF CHARLESTON.

That the site of the Lazaretto attached to the Quarantine Station of Charleston Harbor, be changed from Morris Island to a point on James Island, adjacent to Fort Johnson, upon the lands now the property of the State.

17 Statutes at Large, 332.

SEC. 2. That the station of the Health Officer (of the port of Charleston,) or his deputies, shall be at a suitable point on Sullivan's Island or at Fort Johnson, as may be thought best for the expeditious boarding and examination of vessels arriving at all points into the harbor of Charleston; the location of said station to be determined upon by the Health Officer, with the approval of the Governor.* and the necessary buildings shall be erected for the accommodation of the Health Officer and his deputies.

SEC. 3. The anchorage ground for vessels at quarantine at the ports of Georgetown, Charleston and Hilton Head, shall be where it has heretofore been, and shall be designated by buoys, to be anchored under the direction of the Health Officers,† and every vessel subject to quarantine shall, immediately on her arrival, anchor with them, and there remain with all persons arriving on her, subject to the examination and regulations imposed by law. For the purposes of quarantine, the port at Hilton Head shall be held to include the port of Beaufort.

General Statutes, p. 229.

That the quarantine anchorage for Port Royal Harbor, be at a distance not less than one mile below and south of the mouth of Johnson's or St. Helena River.

17 Statutes at Large, p. 102.

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* The Act of 1880 confers this power upon the Harbor Commissioner.

† In Charleston Harbor this power is transferred to the Harbor Commissioner, by Act of 1880.

Sec. 5. That for the more certain prevention of the introduction of disease into the several ports of this State, all vessels from any place (including Islands) in Asia, Africa, or the Mediterranean, or from any of the West Indies, Bahama, Bermuda or Western Islands, or from any place in America, in the ordinary passage from which, whether by ocean or inland navigation, they pass South of the latitude of Cape Hatteras—Henlopen—Fear; and all vessels on board of which during the voyage, or while at the port of departure, any person shall have been sick, arriving between the first day of May and the first day of November; and all vessels from any foreign port not elsewhere embraced, shall, on arrival at the boarding station, be subject to visitation by Health Officer, but shall not be detained beyond the time requisite for due examination and observation, unless they shall have had on board during the voyage some case of infectious, contagious or pestilential disease, in which case they shall be subject to such quarantine and regulations as the Health Officer may prescribe.

17 Statutes at Large, p. 102.

Sec. 5. All vessels and persons remaining at quarantine on the first day of November, shall thereafter be subject to such quarantine and restrictions as vessels and persons arriving on and after that day.

Sec. 6. All vessels arriving on and after the first day of November, having had, during the voyage, a case of small-pox, cholera, or typhus, or infectious, or contagious disease, and every vessel from a foreign port having passengers, and not hereinbefore declared subject to quarantine, shall, on her arrival, be anchored at quarantine ground, and be visited by the Health Officer, or his deputies, but shall not be detained beyond the time requisite for due examination, unless she shall have have had on board during the voyage some case of small-pox, typhus, or other infectious or contagious disease, in which case she shall be subject to such quarantine as the Health Officer or his deputies shall prescribe. And it shall be the duty of the Health Officer or his deputies, whenever

necessary for the public health, to cause the persons on board of any vessel to be vaccinated.

SEC. 7. The Health Officers, Intendant and Wardens, or the Mayor and Aldermen, as the case may be, whenever, in their judgment, the public health shall require, may order any vessel at the wharves of either of said ports, or in their vicinity, to the quarantine ground or other place of safety, and may require all persons, articles or things introduced into said ports from such vessels to be seized, returned on board, or removed to the quarantine ground or other place. If the master, owner or consignee of the vessel cannot be found, or shall refuse or neglect to obey the order of removal, the Health Officer, Intendant and Wardens, or Mayor and Aldermen, as the case may be, shall have power to cause such removal, at the expense of such master, owner or consignee, and such vessel or person shall not return to the port without the written permission of the Health Officer.

SEC. 8. If any vessel arriving at the quarantine ground, subject to quarantine, shall be bound to some port North of either of said ports, the Health Officer, after having duly visited and examined her, may permit her to pass on her voyage, but no such vessel shall be brought to anchor off of either of said ports, nor shall any of her crew or passengers land in or hold any communication with either of said ports, or any person therefrom.

SEC. 9. The master of every vessel released from quarantine and arriving at a wharf in either of said ports shall, within twenty-four hours after such release, deliver the permit of the Health Officer at the office of the Mayor or Intendant, as the case may be.

SEC. 10. Nothing in this Chapter shall prevent any vessel arriving at quarantine from again going to sea before breaking bulk.

SEC. 11. It shall be the duty of each pilot belonging to either of the said ports to use his utmost endeavors to hail every vessel he shall discover entering the port, and to interrogate the master of such vessel in reference to all matters necessary to enable such pilot to determine whether, accord-

ing to the provisions of the preceding sections, such vessel is subject to quarantine or examination by the Health Officer.

SEC. 12. If, from the answers obtained to such inquiries, it shall appear that such vessel is subject to quarantine or examination by the Health Officer, according to the preceding Sections, the pilot shall immediately give notice to the master of the vessel that he, his vessel, his cargo, crew and passengers, are subject to such examination, and that he must proceed and anchor said vessel at the quarantine anchorage, there to await the further directions of the Health Officer.

SEC. 13. It shall be the duty of every pilot, who shall conduct into port a vessel subject to quarantine or examination by the Health Officer—

1. To bring such vessel to anchor within the buoys marking the quarantine anchorage.

2. To prevent any vessel or boat from coming alongside of the vessel under his charge, and to prevent anything on board from being transferred to or thrown into any other vessel or boat.

3. To present to the master of the vessel a printed copy of this Chapter, when such copy shall have been delivered to him for that purpose.

4. To take care that no violations of this Chapter be committed by any person, and to report such as shall be committed, as soon as may be, to the Health Officer.

5. To subject himself to such detention and delay, and cleansing and purification, as to his person and clothing, as shall be prescribed by the Health Officer, after having boarded or brought to the quarantine ground any vessel subject to quarantine.

SEC. 14. It shall be the duty of the Health Officer to board every vessel subject to quarantine or visitation by him immediately on her arrival, between sunrise and sunset; to inquire as to the health of all persons on board, and the condition of the vessel and cargo, by inspection of the bill of health, manifest, log-book, or otherwise; to examine, on oath, as many and such persons on board as he may judge expedient to enable him to determine the period of quaran-

tine and the regulations to which such vessel shall be made subject, and report the facts and his conclusions, and especially to report the number of persons sick, and the nature of the disease with which they are afflicted, to the Mayor or Intendent in writing.

SEC. 15 It shall be the duty of the Health Officer to reside within or near the quarantine ground, and he shall have power:

1. To remove from the quarantine anchorage ground any vessel he may deem dangerous to the public health, to any place south or east of the quarantine ground inside the bar.

2. To cause any vessel under quarantine, when he shall judge it necessary for the purification of the vessel or her cargo, passengers, or crew, or either of them, to discharge or land the same at the quarantine ground.

3. To cause any such vessel or cargo, bedding, and the clothing of persons on board, to be ventilated, cleansed and purified in such manner, and during such time as he shall direct, and if he shall judge necessary to prevent infection or contagion, to destroy any portion of such bedding or clothing; and, with the concurrence of the Mayor or Intendant, any portion of such cargo which may be deemed incapable of purification.

4. To prohibit and prevent all persons arriving in vessels subject to quarantine from leaving quarantine, or removing their goods or baggage therefrom, until fifteen days after the last case of pestilential, contagious or infectious disease shall have occurred on board, and ten days after her arrival at quarantine, unless sooner discharged by him.

5. To permit the cargo of any vessel under quarantine, or any portion thereof, when he shall judge the same free from infection and contagion, to be conveyed to the landing.

6. To cause all persons under quarantine to be vaccinated, when he deems it necessary for the preservation of the public health.

7. To administer oaths and take affidavits in all examinations prescribed by this Chapter, and in relation to any alleged violation of quarantine law or regulation; such oath

to have the like validity and effect as oaths administered by a Trial Justice.

SEC. 16. The Health Officer may direct in writing any Sheriff, Constable, or other citizen, to pursue and apprehend any person, not discharged, who shall elope from quarantine, or who shall violate any quarantine law or regulation, or who shall obstruct the Health Officer in the performance of his duty, and to deliver him to said officer to be detained at quarantine until discharged by said officer, but such confinement shall in no case exceed ten days. It shall be the duty of the Sheriff, Constable, or other citizen, so directed, to obey such direction; and every such person so eloping or violating quarantine law or regulations, or obstructing the Health Officer, shall be considered guilty of a misdemeanor, punishable with fine and imprisonment, in the discretion of the Court.

SEC. 17. Every vessel during her quarantine shall be designated by colors to be fixed in a conspicuous part of her main shrouds.

SEC. 18. No vessel or boat shall pass through the range of vessels lying at quarantine, or land at the quarantine grounds, without the permission of the Health Officer.

SEC. 19. No lighter shall be employed to load or unload vessels at quarantine without permission of the Health Officer, and subject to such restrictious and regulations as he shall impose.

SEC. 20. All persons being on board of vessels under quarantine shall be provided for by the master of the vessel in which they shall have arrived; and if the master shall omit or refuse to provide for them, or they shall have been sent on shore by the Health Officer, they shall be maintained at the expense of such vessel, her owners, consignees, and each and every one of them; and the Health Officer shall not permit such vessel to leave quarantine until such expenses shall have been repaid or secured; and the said Health Officer shall have an action against such vessel, her owners and consignees, and each and every one of them, for such expenses, which shall be a lien on such vessel, and as such may be enforced as other liens on vessels.

SEC. 21. The Health Officer, upon the application of the master of any vessel under quarantine, may confine in any suitable place on shore any person on board of such vessel charged with having committed an offense punishable by the laws of this State or the United States, and who cannot be secured on board of such vessel; and such confinement may continue during the quarantine of such person, or until he shall be proceeded against in due course of law; and the ex-expense thereof shall be charged and collected as in the last preceding Section.

SEC. 22. Any person aggrieved by any decision, order or direction of the Health Officer, may appeal therefrom to the Governor, Attorney-General, and Comptroller-General, who shall constitute a Board of Appeal; the said Board shall have power to affirm, reverse, or modify the decision, order or direction appealed from, and the decision of the Board thereon shall be final.

SEC. 23. An appeal to the Board of Appeal must be made by serving upon the Health Officer a written notice of such appeal, within twelve hours after (Sundays excepted) the appellant receives notice of the order, decision or direction complained of. Within twelve hours after the Health Officer receives such notice (Sundays excepted) he shall make a return, in writing, including the facts on which his order, decision or direction was founded, to the Governor, who shall immediately call a meeting of the Board of Appeal, and shall be President of said Board; and said appeal shall be heard and decided within twenty-four hours thereafter (Sundays excepted); and until such decision is made, the order, decision or direction complained of, except it refer to the detention of a vessel, her cargo or passengers at quarantine, shall be suspended.

SEC. 24. Whenever the Health Officer, in the performance of the duties and in the execution of the powers imposed and conferred upon him by law, shall order or direct the master, owner or consignee of any vessel under quarantine to remove such vessel from her anchorage, or to do any act or thing, or comply with any regulation relative to said vessel, or to any

person or thing on board thereof, or which shall have been brought to said ports therein, and said master, owner, or consignee shall neglect or refuse to comply with such order or direction, the said Health Officer shall have power to employ such persons and assistants as may be necessary to carry out and enforce such order or direction, and the persons so employed shall have a lien on such vessel, her tackle, apparel and furniture, for their services and expenses.

SEC. 25. Every person who shall oppose or obstruct the Health Officers in performing the duties required of them by law, and every person who shall go on board, or have any communication, intercourse or dealing with any vessel under quarantine, or with any of her crew, or passengers, without the permission of the Health officer, or who shall, without such permission, invade the quarantine grounds or anchorage, shall be guilty of a misdemeanor, and shall be punished by a fine of not less than one hundred nor more than five hundred dollars, or by imprisonment not less than three, nor more than six months in the Penitentiary.

SEC. 26. The Governor may issue his proclamation declaring any place where there shall be reason to believe a pestilential, contagious or infectious disease exists or may exist, to be an infected place, within the meaning of this Chapter.

SEC. 27. Such proclamation shall fix the period when it shall cease to have effect; but such period, if he shall judge the public health require it, may from time to time be extended, and notice of the same shall be published in all the newspapers of said port.

SEC. 28. After such proclamation shall have been issued, all vessels arriving in either of the said ports from such infected place shall be subject to the same quarantine laws and regulations as the vessels embraced in the first sub-division of the second Section of this chapter, and shall, together with their officers ; crews passengers, and cargoes, be subject to all the provisions, regulations, and penalties of this Chapter, in relation to vessels subject to quarantine ; but such quarantine shall not extend beyond the period when such proclamation shall cease to have effect as provided by the last preceding Section.

SEC. 29. Every master of a vessel subject to a quarantine or visitation of the Health Officer, arriving in either of the said ports, who shall refuse or neglect either—

1. To proceed with and anchor his vessel at the place assigned for quarantine at the time of his arrival.

2. To submit his vessel, cargo and passengers to the examination of the Health Officer, and to furnish all necessary information to enable that officer to determine to what length of quarantine and other regulations they ought, respectively, to be subject; or—

3. To remain with his vessel at quarantine during the period assigned for the quarantine, and while at quarantine to comply with the directions and regulations prescribed by law, shall be guilty of a misdemeanor, and be punished by fine not exceeding two thousand dollars, or by imprisonment not exceeding twelve months, or by both such fine and imprisonment.

SEC. 30. Every master of a vessel hailed by a pilot, who shall either:

1. Give false information to such pilot, relative to the condition of his vessel, crew or passengers, or of the health of the place or places from whence he came, or refuse to give such information as shall be lawfully required;

2. Or land any person from his vessel, or permit any person except a pilot to come on board of his vessel, or unlade or tranship any portion of his cargo, before his vessel shall have been visited and examined by the Health Officer;

3. Or shall approach with his vessel nearer to the wharves in said ports than the place of quarantine to which they may be directed, shall be guilty of the like offence, and subject to the like punishment; and any person who shall land from any vessel, or unlade or tranship any portion of her cargo, under like circumstances, shall be guilty of a like offence, and subject to the like punishment.

SEC. 31. Any person who shall violate any provision of this Chapter, or neglect or refuse to comply with the directions

and regulations which any of the Health Officers may prescribe, shall be guilty of the like offence, and be subject, for each offence, to the like punishment.

SEC. 32. There shall be one Health Officer at the port of Georgetown, one at Charleston, and one at Hilton Head, respectively,* who shall be appointed by the Governor, and who shall hold their offices for the term of two years, unless sooner removed. Said officers shall keep a faithful record of all their doings under the provisions of this Chapter, and report the same to the Governor at the end of each month.

SEC. 33. Said Health Officers shall each receive an annual salary of twelve hundred dollars, except the Health Officer at the port of Charleston, who shall receive an annual salary of fifteen hundred dollars, payable quarterly, out of the Treasury of the State; and they each shall be allowed an additional sum of fifteen dollars per month, for boat hire and other incidental expenses.

SEC. 34. That wherever the words "Health Officer" occur in this Chapter, they shall be understood to mean the Health Officer or his deputies: *Provided*, That said deputies shall, in all cases, be graduates of a regular medical school.

SEC. 35. Every pilot or other person who shall bring, or attempt to bring, or cause to be brought, into any port of this State, any vessel, or the whole or any part of the crew, passengers or cargo beyond the places appointed for her examination, without such vessel being examined, according to law, shall forfeit and pay, the one-half to the use of the State, and the other half to the use of such person as shall sue for the same, the sum of five hundred dollars; and the pilot shall, moreover, be deprived of his branch as a pilot: *Provided*, That nothing herein contained shall extend to persons who may be shipwrecked.

SEC. 36. The officer or officers who may be entrusted with the execution of the quarantine laws are authorized and directed, in case of a violation, or attempt to violate, any of

*The Act of 1877, 16 Statutes at Large, p. 117, provides that these officers "shall in all cases be a graduate of a regular medical school."

the said laws, to board, by force of arms, any vessel used in such violation, or attempt to violate, and to detain her and her crew and passengers.

SEC. 37. Any vessel which shall be restrained under quarantine laws, and shall attempt to violate the same, may be fired upon, and detained by force of arms.

SEC. 38. When the Governor may deem it necessary, he shall, at the expense of the State, hire and employ boats and small craft, and a sufficient number of able men, well armed, to be stationed wherever he may think fit, and to act under his directions, in order to enforce obedience to the laws of this State requiring the performance of quarantine; and, also, to arm such men, if requisite, with any fire-arms belonging to this State.

SEC. 39. All fines and forfeitures and penalties provided by the laws of the State for the violation of the quarantine laws, or disobedience of the orders of the Governor establishing quarantine regulations, shall be recovered by indictment in the Court of Sessions; and all persons offending against the same, upon conviction, shall be liable to imprisonment not exceeding twelve months, in addition to such fines, forfeitures and penalties.

General Statutes, p. 229,

OF ASIATIC CHOLERA.

SEC. 1. Governor to make regulations to suppress.

SECTION 1. That full power and authority is given to the Governor of this State, by his proclamation, to make such regulations as, in his opinion, may be necessary, in order to prevent the entrance of Asiatic Cholera into this State, and to prevent the spreading of such disease in this State.

General Statutes, p. 238.

b.—OF THE CHARLESTON HARBOR COMMISSION.

By Act of General Assembly, approved December 24th, 1880, a Harbor Commission for the Bay and Harbor of Charleston is created. The Commission to be composed of nine members, as follows: The Mayor of the City of Charleston, the President of the Charleston Chamber of Commerce, the Chairman of the Executive Committee of the State Board of Health, if he be a resident of said city, and if he be not such resident, some member of the Executive Committee resident of said city, to be designated by said Committee, "and six residents of the County of Charleston, to be appointed by the Governor, one of whom at least should be a full branch Pilot of the port of Charleston." The Mayor of the City to be Chairman of the Commission *ex-officio*. Those members appointed by the Governor to hold office for four years and until their successors have accepted, or until removed by the Governor.

Jurisdiction.—The jurisdiction of the Board is thus defined: That the said Board of Harbor Commission shall have jurisdiction over the Harbor and Bay of Charleston and the rivers and creeks flowing therein, and shall make such regulations as they may see fit for the protection and preservation of the said bay and harbor, rivers and creeks from injury, by means of deposit of ballast and other materials, the creation of obstructions or any other cause whatsoever, with authority to prescribe such penalties for the violation of said regulations as they may deem adequate: *Provided*, That such penalty shall not exceed five hundred dollars for each offence, together with the expense of removing such obstructions or interferences with navigation. And the Solicitor of the Circuit shall be and he is hereby charged with the duty of enforcing such penalties upon the information and at the request of the said Board of Harbor Commission. They shall also take control of all quarantine stations and buildings in said harbor, designate and fix the location thereof, and make such regulations respecting the same as will secure the

thorough and complete enforcement of the quarantine laws of this State. They are also invested with full power and authority to preserve peace and good order in said bay and harbor: *Provided*, That none of the said regulations shall be repugnant to the laws of the land: *Provided also*, That nothing herein contained shall be so construed as to limit or encroach upon the powers and duties imposed upon the State Board of Health by any Act or Acts of Assembly now of force, or which may hereafter be passed.

17 Statutes at Large, p. 398.

LAWS OF FORCE REGULATING THE PRACTICE OF MEDICINE.

SECTION 1. That it shall be unlawful for any person within the limits of this State who shall not attend two full courses of instruction, and graduated at some school of medicine, either in the United States or some foreign county, or who cannot produce a certificate of qualification from some State Medical Society, and is not a person of good moral character, to practice medicine or prescribe medicine or medicines for reward or compensation for any sick person within this State.

SEC. 2. In no case where in the provisions of this Chapter shall have been violated, shall any person so violating receive a compensation for services rendered: *Provided*, That nothing herein contained shall in any way be construed to apply to any person practicing dentistry or females practicing midwifery.

SEC. 3. All persons now practicing or who may hereafter practice medicine or surgery as herein provided, shall be entitled to charge, sue for and collect for their service.

General Statutes, p. 228.

The following compensation shall be allowed to any physician who may be called in by the County Coroner or Acting Coroner to make a *post mortem* examination, and testifying

thereof as an expert, to wit: Where death was by violence, and no dissection required, five dollars; where dissection is necessary, and body not interred, ten dollars; same after one or more days' interment, thirty dollars; for same when chemical analysis is required, a sum not exceeding fifty dollars, with expenses of analysis and mileage for every mile traveled: *Provided,* When the chemical analysis has been made, the physician who makes it shall furnish to the County Commissioners with his account a full statement of analysis: *And provided,* Every such account must have the certificate of the Coroner or Acting Coroner.

16 Statutes at Large, p. 630.

The County shall pay fees of physicians and surgeons testifying as experts before a Coroner's jury, or at the Circuit Court, after a *post mortem* examination, ten dollars, and five cents per mile for actual and necessary travel.

General Statutes, p. 153.

Any person living in this State, or any person coming into this State, who shall practice medicine in any of its departpartments, or perform, or attempt to perform, any surgical operation, upon any person within the limits of this State, in violation of Section 1 of Chapter XXXII of this Act,* shall, upon conviction thereof, be fined not less than fifty, nor more than one hundred dollars, for such offense; and, upon conviction for a second violation, shall, in addition to above fines, be imprisoned in the County jail of the County in which said offense shall have been committed, for the term of ninety days: *Provided,* That nothing herein contained shall in any way be construed to apply to any person practicing dentistry, or females practicing midwifery.

General Statutes, p. 737.

*Code, Sec. 1, of this head.

LAWS OF FORCE REGULATING THE SALE OF DRUGS AND MEDICINES.

The Pharmaceutical Association of the State of South Carolina was incorporated by Act of General Assembly, March 10th, 1876.

This Act, after vesting said Association with all the powers and privileges usually incident to such a corporation, enacts:

SEC. 3. That the Association hereby incorporated shall elect, annually, four members, who, with two other persons, to be appointed by the Medical College of the State of South Carolina, shall constitute a Board of Pharmaceutical Examiners for the City of Charleston, to hold office for the term of one year. And the said Association shall elect, annually, four members, who, with two other persons, to be appointed by the Medical Faculty of the University of South Carolina,* shall constitute a Board of Pharmaceutical Examiners for the City of Columbia, to hold office for the term of one year. Any vacancy or vacancies occurring in the course of the year in either or both of the above mentioned Boards shall be temporarily filled by the appointment of the President of the said Association. The said Boards shall be styled the Boards of Pharmaceutical Examiners, and shall meet, respectively in Charleston and Columbia once every three months, and keep in session until applicants who have previously made application to the Secretary of the said Association shall have been examined. And four members of either of said Boards shall constitute a *quorum* for the transaction of business and the granting of licenses.

SEC. 4. That from and after the passage of this Act, the said Board of Pharmaceutical Examiners shall alone possess and exercise all the powers heretofore given and now possessed by the Faculty of the Medical College of the State of South Carolina and the Medical Faculty of the University of South Caro-

*There is now no Medical Faculty of the University of South Carolina.

lina, in respect to the license of pharmaceutists, apothecaries and druggists.

SEC. 5. That every pharmaceutist, apothecary or retail druggist who carries on and conducts the business of such occupation in this State, after the expiration of three (3) months from the passage of this Act, must have a license therefor from one of the above named Boards; and any person who shall thereafter carry on and conduct the business of said occupations, or any of them, without such license, shall be liable to indictment as for a misdemeanor, and, on conviction, subject to a fine not exceeding five hundred dollars, or imprisonment not exceeding six months.

SEC. 6. That before granting said license, except in cases hereinafter excepted, each applicant therefor shall undergo an examination by and before that Board, to which the application is made, and of such nature as they shall require ; but such examination must include the reading of manuscript prescriptions and explanations thereof, the discovery or detection of unusual doses of drugs, and especially poisons, the recognition and distinguishing of the various roots, barks, leaves, fruits, resins and gums in common use, and the proper antidotes and mode of administration thereof for the different poisons.

SEC. 7. That no examination shall be required in case the applicant is a regular graduate in medicine or pharmacy of a school that is in the *ad eundem* of the University of South Carolina or the Medical College of the State of South Carolina, but such an applicant shall be entitled to a license upon furnishing evidence of his graduation satisfactory to either of the said Boards, and upon payment of a fee of five dollars ($5) for the license. That in case the applicant undergoes examination, the charge for the same and granting the licenses shall not exceed ten dollars, one half of which shall go, in case the applicant was examined before the Charleston Board, to the Medical College of the State of South Carolina, and in case the applicant was examined in Columbia, to the University of South Carolina, and the balance, in both cases, to the Pharmaceutical Association of the State of South Carolina.

SEC. 8. That it shall be the sole duty of the Pharmaceutical Association of the State of South Carolina to establish, carry on and preserve in a book to be kept for that purpose, a register of all pharmaceutists, apothecaries and retail druggists in the State, including the names of persons registered, place of business, the fact whether the person registered be a graduate in medicine or pharmacy, or whether under license granted on examination and any other matter of information the said Association may see fit to add.

SEC. 9. That it shall be the duty of all licensed pharmaceutists, apothecaries, and retail druggists, by whomsoever of the said Boards licensed, to have their names registered in manner aforesaid by the Pharmaceutical Association of the State of South Carolina, and to report annually on or before the first day of November of each year, to the said Pharmaceutical Association of the State of South Carolina, whether any, and if yea, what change has occurred within the then preceding year as to their respective places of business, and for omission or neglect of the requirements of this Section, or any of them, they shall, respectively, incur a fine of twenty-five dollars, and for each and every registration, or change thereof, the party so registered shall pay to the Secretary of said Association the sum of one dollar, which shall be their compensation for the services performed in accordance with the provisions of this Act.

SEC. 10. That it shall be the duty of the Pharmaceutical Association of the State of South Carolina to make a correct report to the General Assembly of work done by them in accordance with the provisions of this Act, on or before the first day in December in each year.

SEC. 11. That every pharmaceutist or other person selling any poison shall be satisfied that the purchase is made for legitimate purposes, and shall keep a book in which shall be recorded every sale of the following articles, viz: Arsenic and its preparations, all metalic cyanides and cyanides of potassium, tartar emetic, corrosive sublimite, aconite and its preparations, strychnine, and all other poisonous alkaloids, and their salts, cantharides, ergot, hydrocyanic acid; the said re-

cord also to exhibit the name of the person to whom sold, place of his residence, and purpose of purchase, as stated; which book shall be kept at all times subject to the inspection of the Coroner of the County and the Solicitor of the Association, or such other persons as either of them may designate.

SEC. 12. That all persons in this State engaged in business as pharmaceutists, apothecaries or druggists, either in the wholesale or retail of drugs, shall, to every bottle, vial, box or other package containing any poison named in the preceding Section, or any one or more of the following articles, viz: Oxalic acid, chloroform, belladonna and its preparations, opium and all its preparations except paregoric, digitalis and its preparations, henbane and its preperations, hemlock or conium, or any other article that may be added to this list by the Pharmaceutical Association of the State of South Carolina, securely attach a label, whereon shall be either printed or legibly written with red ink the name of the poison and the name of at least one antidote, with brief directions as to the mode of using the same: *Provided*, That nothing herein contained shall be construed to apply to the filling of prescriptions made by regular physicians. *And provided, further*, That it shall be the duty of the Boards of Pharmaceutical Examiners, or either of the said Board, on application at the time of registration, to furnish to the party registering a form of label for poisons.

SEC. 13. That this Act shall not be construed to prevent merchants and shopkeepers from vending or exposing for sale medicines already prepared: *Provided*, Such merchants and shopkeepers shall attach to the article sold a copy of the label attached thereto by wholesale druggists, and in the sale of poisons shall comply with the provisions of Sections 11 and 12 of this Act.

SEC. 14. That it shall not be lawful for the proprietor of any pharmaceutical shop to allow any person not qualified in accordance with the provisions of this Act to dispense of poisons, or compound the prescriptions of physicians; and any person who, upon indictment for a violation of this Section,

shall be convicted of the same, shall pay a fine not exceeding five hundred dollars, or suffer imprisonment for a period of not more than six months.

SEC. 15. That this Act shall not be construed so as in any way whatsoever to affect those who have, previous to the date of the passage of the same, obtained a license from the Medical Faculty of the University of South Carolina or the Faculty of the Medical College of the State of South Carolina, nor in any way deprive the said Faculties of granting diplomas to pharmaceutists, apothecaries and druggists who may have duly graduated in the Medical College of the State of South Carolina, or the Medical Department of the University of South Carolina, respectively, by virtue of which the said graduates shall be entitled to a license, without examination, upon payment of a fee of five dollars, as above mentioned.

SEC. 16. That the said Association is hereby authorized, through and by its Solicitor, or otherwise, as it may deem most expedient, to prosecute all persons violating the provisions of this Act, or any of them.

SEC. 17. That all Acts or parts of Acts inconsistent with or repugnant to this Act are hereby repealed.

LAWS OF FORCE REGULATING THE PRACTICE OF DENTISTRY.

The following Act, approved February 3d, 1875, regulates the practice of Dentistry within this State.

SECTION 1. Be it enacted by the Senate and House of Representatives of the State of South Carolina, now met, and sitting in General Assembly and by the authority of the same That from and after the passage of this Act, it shall be unlawful for any person or persons to engage in the practice of dentistry in the State of South Carolina, unless said person or persons shall have received a diploma from the faculty of some dental college, duly incorporated under the laws of this or some other State of the United States, or foreign Government, in which is annually delivered, in good faith a full

course of lectures and instructions in dentistry, or shall have obtained a license from a Board of Dentists, duly authorized and appointed by this Act to issue such license.

SEC. 2. It shall be the duty of the South Carolina State Dental Association, at the next annual meeting thereof after the passage of this Act, to elect a Board of Examiners, to consist of five members, to be known by the title of the Board of Dental Examiners in the State of South Carolina. The members of the Board shall, at the first election, be elected for terms of one, two, three, four and five years, respectively, or untill their successors shall have been elected. And it shall be the duty of the South Carolina State Dental Association, at each subsequent annual meeting thereof, to elect a person for the term of five years to fill the place of the member of the Board whose term of office shall at the time expire and also to fill such vacancies in the Board as have occurred during the year. And if at any regular meeting of the Board, any member or members shall fail to be present, the South Carolina State Dental Association may, at its discretion, declare the office of such absentee to be vacated, and may proceed to elect a new member or members for the unexpired term of such person or persons, or it may elect a member or members to fill, temporarily, the places of such absentees. This Board shall be organized by the election of a President and a Secretary.

SEC. 3. It shall be the duty of the Board of Examiners to meet annually at the time and place of meeting of the South Carolina State Dental Association, giving thirty days' notice in the public newspapers, published in not less than three different places in the State, viz: one in Charleston, one in Columbia, and one in Greenville, of such annual meeting. Secondly, to prescribe a course of reading for those who study dentistry under private instructions. Thirdly, to grant a license to any applicant who shall furnish satisfactory evidence of having graduated, and received a diploma from any incorporated dental college in good standing with the profession, without fee, charge or examination. Fourthly, to grant licenses to all other applicants who undergo a satisfactory

examination. Fifthly, to keep a book in which shall be registered all persons licensed to practice dentistry in the State of South Carolina. The expenses of said licenses shall be fifteen dollars, to be paid by the licensee. And that all persons who do now hold, or may hereafter hold, a license to practice dentistry in this State shall become a member of the South Carolina State Dental Association immediately upon the obtaining of said license: *Provided*, He shall be allowed to waive his right of membership.

SEC. 4. That the books so kept shall be a book of record, and a transcript from it, certified by the officer who has it in keeping, with the common seal, shall be evidence in any Court of the State.

SEC. 5. That three members of said Board shall constitute a quorum for the transaction of business, and should a quorum not be present on the day appointed for their meeting, those present may adjourn from day to day until a quorum is present.

SEC. 6. That one member of said Board may grant a license to an applicant to practice until the next regular meeting of the Board, when he shall report the fact, at which time the temporary license shall expire; but such temporary license shall not be granted by a member of the Board after the Board has rejected the applicant.

SEC. 7. That every dentist in this State be required to keep a record of all cases treated in his practice, in accordance with a form to be designated by the South Carolina State Dental Association, and furnish his patient with a copy of the same, if so desired by the patient.

SEC. 8. That any person who shall, in violation of this Act, practice dentistry in the State of South Carolina for fee or reward shall be liable to indictment, and on conviction shall be fined not less than fifty or more than three hundred dollars: *Provided*, That nothing in this Act shall be so construed as to prevent any person from extracting teeth.

SEC. 9. That on trial of such indictment it shall be incumbent on the defendant to show that he has authority under the law to practice dentistry to exempt himself from such penalty.

SEC. 10. That all fines collected shall inure to the educational fund of the County where the offender resides.

SEC. 11. That those who have been in the regular practice of dentistry in the State prior to the passage of this Act are exempt from the provisions of the same, except Section 7 of this Act.

SEC. 12. That the South Carolina State Dental Association is hereby made a body politic and corporate, shall have and use a common seal, sue and be sued, plead and be impleaded, and be empowered to make all necessary by-laws not inconsistent with the State laws and Constitution.

SEC. 13. That this Act shall continue in force until repealed.

Approved February 23, 1875.

LAWS ON LUNACY.

SEC. 23. That the County Commissioners shall be authorized to send all pauper lunatics, idiots, and epileptics in their several counties to the Lunatic Asylum.

GENERAL STATUTES 222.

SEC. 3. It shall be the duty of the Regency to admit as subjects of the institution all idiots, lunatics and epileptics, being citizens of this State, according to the following regulations, and subject to the following conditions, that is to say:

1. All persons who shall be found idiots or lunatics, by inquision from the Probate or Circuit Courts, or on trials in the Circuit where the Court shall order such sdmission.

2. Where it shall be requested under the hand of the husband or wife, or (where there is no husband or wife,) of the next of kin of the idiot or lunatic.

3. All persons who shall be declared lunatics, idiots or epileptics, after due examination by one Trial Justice and two licensed practicing physicians of the State. Where the subject is a pauper, the admision shall be at the request of the

County Commissioners of the County wherein such pauper has a legal settlement; otherwise, the admission shall be at the request of the husband or wife; or, where there is no husband or wife, of the next of kin of the idiot, lunatic or epileptic.

SEC. 4. All idiots and lunatics from any of our sister States shall be admitted on such evidence of their lunacy or idiocy as the Regents regard sufficient; but no foreign lunatic or idiot shall be admitted or kept in the institution, to the exclusion of subjects being citizens of this State, and they shall pay the same rates as citizen subjects.

SEC. 5. Whenever a Judge of Probate, or Judge of the Circuit Court, shall direct an order of any Trial Justice, to enquire as to the idiocy, lunacy or epilepsy of any person, or when information, on oath, shall be given to any Trial Justice, that a person is an idiot, lunatic or epileptic, and is chargeable for his support on the County, it shall be the duty of such Trial Justice forthwith to call to his assistance two licensed practicing physicians, and examine such person, and the evidence of his or her idiocy, lunacy or epilepsy; and if, after full examination, they shall find such person an idiot, lunatic or epileptic, they shall certify to the said Judge, or to the Board of County Commissioners, whether, in their opinion, such person is curable or incurable, and whether his enlargement would be harmless or dangerous or annoying to the community; and thereupon the Judge or the Board of County Commissioners, in his or its discretion, may make an order that the said person shall be sent to the Lunatic Asylum.

SEC. 6. Any Judge of the Circuit Court is authorized to send to the Lunatic Asylum every person charged with the commission of any criminal offense, who shall, upon the trial before him, prove to be *non compos mentis;* and the said Judge is authorized to make all necessary orders to carry into effect this power. Where the person so sent is not a pauper, he shall be supported out of his own estate, according to regulations to be prescribed by the Court, as on a return to a writ *de lunatico inquirendo.*

SEC. 7. The Judge of the Probate Court may commit to the Lunatic Asylum any idiot, lunatic or person *non compos mentis*,

who, in his opinion, is so furiously mad as to render it manifestly dangerous to the peace and safety of the community that he or she should be at large; and also, in all such other cases provided by law. In all cases the Judge shall certify in what place the said person or persons resided at the time of the commitment, and such certificate shall be conclusive evidence of such residence.

LIST OF PHYSICIANS PRACTICING IN THE STATE OF SOUTH CAROLINA, WITH POST OFFICE ADDRESS.

Abbeville County.

Edwin Parker, Abbeville C. H.
E. H. McBride, "
I. W. Marshall "
L. J. Brooks, "
T. C. Drennan, "
T. J. Mabry, "
Thos. Lyon, "
J. W. Kellar, "
W. M. Taggart, "
M. C. Taggart, Greenwood.
W. B. Milwee, "
E. R. Calhonn, "
G. W. Waddell, "
Stewart Blake, Ninety-Six.
Lewis Anderson, "
G. F. W. Wenck, "
J. Boseman, "
Andrew Yates, Hodges.
G. F Sheridan, "
F. F. Gary, Cokesbury.
W. T. Jones, "
T. W. Jones, "
A. P. Hawthorn, Due West.
J. L. Miller, "
J. A. Robinson, "
E. H. Edwards, "
G. S. Reid, Donaldsville.
W. Spear, Lowndsville.
J. C. Johnson, "
J. H. Bell, Antreville.
G. W. Stieffer, "
——Frierson, "
P. H. Adams, Phœnix.
Benj. Ross, "
Joseph Pressley, Millway.
J. D. Niei, "
J. A. Wideman, Wideman's.
J. T. Wideman, "
W. E. Link, Calhoun's Mill.
Aug't Marshall, White Hall.
John Ligon, "
——Mitchell, Bordeaux.

Aiken County.

Amory Coffin, Aiken.
W. H. Geddings, "
P. G. Rockwell, "
T. G. Croft, "
B. F. Wyman, "
I. H. Morgan, "
W. B. Samuels, Graniteville.
S. Russ, "
T. L. Lee, Langley.
C. B. Salley, "
——Abney, "
—— Proda, Langley.
P. B. Butler, Hamburg.
T. W. Wooward, Montmorenci.
N. M. Boatwright, "
T. S. Sims, Vaucluse.
W. D. Jennings, "
M. Pitts, Edisto Mills
J. K. Gantt, Merritts Bridge.
J. W. Lomax, Davis Bridge.
W. S. O'Dowd, Williston.
J. W. Salley, "
J. E. Durr, "
W. S. Cannon, Ellenton.
R. C. Brabban, "
S. G. Mobley, Silverton.
John Galphin, Beech Island.
W. R. Eve, "
Phil Eve, "
H. R. Cooke, "
J. H. Murray, "
Isaac Foremars, Jackson Station.
T. S. Durham, Rich's Store.

Anderson County.

O. R. Broyles, Anderson C. H.
J. P. Duckett, "
R. F. Diver, "
J. T. McFall, "

W. H. Nardin, Anderson, C. H.
Saml. M. Orr, "
R. A. Reid, "
M. L. Sharpe, "
P. A. Wilhite, "
J. O. Wilhite, "
W. H. Scudday, "
Richard Thompson. "
—— Owens, "
E. M. Brown, Belton.
W. H. Todd, "
Jas. W. Earle, Evergreen.
A. E. Thompson, "
M. C. Parker, Honea Path.
R. S. Cheshire, "
A. G. Witherspoon, Holland's Store.
James Todd, "
T. G Cook, Providence Camp Ground.
Silas Clayton, Equality.
T. G. Clayton, "
J. G. Duckwater, Sandy Springs.
T. L. Cuthbert, Pendleton.
T. J. Pickens, "
Wm. Jenkins, "
P. H. E. Sloan, "
Aug. Thompson, Storeville.
C. V. Barnes, "
G. B. Brown, Townville.
W. K. Sharpe, "
Silas Haller, "
W. A. Clinkscales, Moffatsville.
A. G. Cook, "
Walter Sherrard, "
J. H. Reid, "
B. F. Brown, Williamston.
T. G. Carpenter, "
H. J. Epting, "
John Wilson, "
Robt. Wilson, "
P. Richardson, "

BARNWELL COUNTY.

L. S. Hay, Allendale.
J. W. O'Gilvry, "
J. H. Harley, "
J. C. Durant, "
J. Miller, Appleton.
T. P. Walkers, "
J. M. Hiers, "
M. R. Gill, "
W. F. Holmes, Barnwell C. H.
J. J. O'Bannon, "
A. B. Patterson, "
G. R. C. Todd, "
L. A. Wright, Bamberg.
J. F. Baggott, "
J. B. Black, "
A. R. Spencer, "
W. B. Rice, "
J. P. Ott, "
J. B. Lartigue, Blackville.
L. C. Stephens, "
P. F. Stokes, "
Alex. Storn, "
B. F. Peeples, "
G. J. O'Dom, "
M. J. O'Dowd, "
W. J. Young, Campbeltown.
J. W. Weekly, "
W. S. Caunder, Ellenton.
S. G. Mobley, "
A. W. Bailey, "
R. C. Brabham, "
J. D. Lockwood, Folks' Store.
Henry W. Kease, Buford's Bridge.
N. F. Kirkland, Sr., "
N. F. Kirkland, Jr., "
J. F. Kearse, "
J. F. Faust, Graham's.
H. M. Faust, "
S. H. Tindal, "
E. J. Frederick, "
J. D. Cleckley "
N. W. Salley, "
A. J. Wolfe, Midway.
W. B. Steedly, "
J. P. Carter, "
A. W. Bailey, Robin's.
Martin Bellinger, "
J. M. Turner, "
M. A. Turner, "
L. Brooker, Williston.
W. W. Smith, "

J. M Smith, Williston.
W. C. Smith, "
J. W. Lowman, "

BEAUFORT COUNTY.

H. M. Stuart, Beaufort.
M. M. Sams, "
John Johnson, "
Arthur Gibbes, "
A. P. Prioleau, "
C E. DuPont, Grahamville.
B. W. Seabrook, "
Thos. H. Gregorie, "
Joseph DeWees, "
Paul Pritchard, Hardeeville.
Jos. H. Mellichamp, Bluffton.

CHARLESTON COUNTY.

T R. Aldrich, Charleston.
F. O Alleman, "
J. L. Ancrum, "
J W. Angel, "
W. H. Bailey, "
A. N. Bellinger, "
R L. Brodie, "
J. S. Buist, "
J. P. Chazal, "
Wm. Crum, "
C. Davega, "
Jno. L. Dawson, "
H. W. DeSaussure, "
H.W. DeSaussure, Jr., "
P. G. DeSaussure, "
Wm. DuPont, "
Aug. Fitch, "
John Forrest, "
H. D. Fraser, "
J. F. M. Geddings, "
M. Greenland, "
T. S. Grimke, "
H. B. Horlbeck, "
W. H. Huger, "
E. E. Jenkins, "
E. H. Kellers, "
R. A. Kinloch, "
George G. Kinloch, Charleston.
Otis Kinloch, "
C. B. Lanneau, "
S. T. Lea, "
Robert Lebby, "
Robert Lebby, Jr., "
B M. Lebby, "
Thos. Legare, "
J. Lockwood, "
S. L. Lockwood, "
J. C. Ludwig, "
C. L. Meyers, "
M. Michel, "
T. B. McDow, "
J. S. Mitchell, "
J. R. Mood, "
T. L. Ogier, "
W. G. Ogier, "
F. L. Parker, "
A. P Pelzer, "
F. P. Porcher, "
J. Ford Prioleau, "
Edmund Ravenel, "
W. C. Ravenel, "
T. Reentzjerna, "
R. B. Rhett, "
F. M. Robertson, "
D. D Sams, "
C. H. Schroder, "
Manning Simons, "
T. G. Simons, "
T. S. Thomson, "
W. T. Wragg, "
Joseph Yates, "
P. P. Palmer, Eutawville.
Joseph Palmer, Trial.
P. S. Kirk, "
Jos. Cain, Monks Corner.
Morton Waring, "
Edw. F. Allston, Bonneau's.
W. T. W. Baker, McClellansville.
Stephen D. Doar, "
Edwd. Dawson, Mt. Pleasant.
John J. DuPre, "
J. J. Inabinet, Holly Hill.
Jos. B. Wiggins, Roadville.
Alfred Raoul, Moultrieville.

A M. Lynah, Moultrieville.
Geo. S. Pelzer, "

CHESTER COUNTY.

S. E. Babcock, Chester C. H.
J. A. Watson, "
C. L. Clawson, "
S. C. Morrison, "
D. Lyle, "
D. C. Atkinson, "
S. B. McLerkin, Halselville.
Jas. Thompson, "
Geo. W. Jordan, Chesnutgrove
A. F. Anderson, Lowrysville
J. S. McNeel, "
J. M. McCollum, Baton Rouge.
Wm. McCollum, "
J. A. Wade, "
J. D. Marion, Richburg.
C. B. McKeown, "
W. F. Strait, "
W. J. W. Cornwell, Blackstock.
S. C. Douglass, "
S. M. Wylie, "
J. A. Walker, Cedar Shoals.

CHESTERFIELD COUNTY.

Jno. J. Wilson, Cheraw.
Cornelius Kollock. "
Jno K. McLean, "
Frank Waddill, "
Charles W. Kollock "
Thos. E. Lucas, Chesterfield C. H.
R. P. Miller, Jefferson.
T. Thweat, White Plains.
Albert Myers, Irvington.

CLARENDON COUNTY.

Jno. J. Ingram, Manning.
S. C. C. Richardson, "
Herman H. Huggins, "
Jno. D. Dinkins, "
Robert M. Brailsford, Fulton.
B. M. Badger, Wrights Bluff.
Thos. L. Burgess, Wrights Bluff.
Saml. P. Oliver, Foreston.
J. McSwain Woods, McFadden P. O.
J. Van Epps, "
Jno. J. Hodge, Packville.

COLLETON COUNTY.

W. M. Shuler, Georges.
J. P. Mims, "
J. P. Millard, "
P. K. Moorer, "
Peter Horn, "
Benj. Rhett, Summerville,
Danl. Fludd, "
R. M. Brailsford, "
Robert Ilderton, "
W. B. Way, Ridgeville.
B. W. S. Junkins, Adam's Run.
T. O. Barnwell, "
W. W. Clement, "
L. M. Grimball, "
C. H. Brownlee, New Road.
J. P. Carter, Folk's Store.
W. W. Folk, "
J. W. Colson, Bell's X Road.
C. E. Kinsey, Smoke's X Road.
Peter Stokes, "
J. C. Riche, Sniders X Road.
J. H. Price, Walterboro'.
C. M. Rivers, "
B. P. Fishburne, "
T. P. Edwards, "
Chas. Witsell, "
W. H. Miller, "
A. E. Williams, Sr., Jacksonboro'.
A. E. Williams, Jr., "
T. S Waring, "
H. E. Bissell, Green Pond.
S. C. Moore, White Hall.

DARLINGTON COUNTY.

——Wilson, Leavenworth.
Peter Wilson, Darlington.
W. A. Player, "
J. A Boyd, "

J. C. Wilcox, Darlington.
M. S. Iseman, "
B. C. Norment, "
H. Williamson, "
Simon Parrott, Swift Creek.
John Parrott, "
J. B. C. Wright, Timmonsville.
J. F. Culpepper, "
J. E. Byrd, Sr., "
J. E. Byrd, Jr., "
J. M. Huntin, "
S. H. Pressley, Society Hill.
B. S. Lucas, Hartsville.
Mc L. McFarland, Hartsville.
H. D. Lee, Lydia.
——Josey, Lydia.
W. L. Galloway, Lydia.
R. B. R. C. Walace, Lydia.
S J. Blackwell, Florence.
——Lake, "
Jas. Evans, "
J. W. King, "
J. C. Blackwell, "
——Kinloch, Cartersville.
——Palmer, "

EDGEFIELD COUNTY.

M. W. Abney, Edgefield C. H,
Allen Dozier, "
Jas. A. Devore, "
Prescot Devore, "
J. W. Hill, "
W. D. Jennings, "
D. C. Tompkins, Meeting street.
J. B. DuBose, Ridge Spring.
L. S. Hill, "
T. L. Teague, Johnston's Depot.
J. E. Cowles, "
Z. W. Smith, "
W. H. Zimmerman, "
G. W. Wise, Trenton.
C. M. Buckhalter, Rehoboth.
J. H. Jennings, "
T. E. Jennings, "
W. A. Culbreth, "
John Lake, Pleasant Lawn.
Walter Nicholson, Pleasant Lawn.
J. H. Strom, "
W. S. Sheppard, "
R. C. Mayson, "
J. C. Lanier, Longmires.
J. E. Lewis, "
Thos. J. McKie, Woodlawn.

FAIRFIELD COUNTY.

E. W. Aiken, Winnsboro'.
Thos. Broom, "
Edward Gibson, "
Henry Gibson, "
R. B. Hanahan, "
T. T. Robertson, "
Ira Smith, "
Wm. K. Turner, "
Robert Arnet, Monticello.
K. W. Owens, "
B. Davis, Blythewood.
Wm. Sykes, "
Thos. Douglass, Blackstock.
R. H. Edmonds, Ridgeway.
John Palmer, "
T. M. E. Fant, Lyle's Ford.
Samuel McLerkin, Feasterville.
Ira Scott, Rocky Mount.
Osmond Scott, "

GEORGETOWN COUNTY.

A. M. Forster, Georgetown.
L. L. Williams, "
Geo. E. Sparkman, "
T. P. Bailey, "
H. F. Heriot, "
Jas. R. Sparkman, Plantersville.
Geo. B. Weston, "
A. B. Flagg, Brookgreen.
M. L. Wallace, Black Mingo (Williamsburg County.)
J. D. Magill, Georgetown.

GREENVILLE COUNTY.

W. R. Jones, Greenville.
E. F. S. Rowley, "
R. D. Long, "

Waddy Thompson, Greenville.
J. W. Hewitt, "
Geo. E. Trescot, "
J. H. Maxwell, "
T. T. Earle, "
H. R. Rutledge, "
A. Wallace, "
G. L. Glazeur, "
G. T. Swandale, "
M. G. Berry, "
W. A. Wright, "
J. F. Dorrah, "
W. Saxby Miller, "
D. R. Anderson, Fairview.
H. B. Stewart, "
Frank Jenkins, "
D. Bennett, Plain P. O.
W. P. League, "
J. Harper Donald, Piedmont.
J. F. Donald, Reedy River.
Oscar Snow, "
R. R. Goodlet, Traveller's Rest.
H. P. Goodwin, Lima.
B. F. Few, Sandy Flat.
C. C. Few, "
T. R. League, Batesville.
G. L. Martin, Lime Creek.
W. T. Stokes, "
L. M. West, Marietta.
B. P. West, White Sand.
B. V. Westmoreland, Green Station.
M. B. Roberts, Woodville.
—— Holcombe, Chick Spring.
—— Wood, Belleview.

HAMPTON COUNTY.

J. H. Goethe, Varnsville.
Walter Hay, "
Jeff. Ellis, "
Harting Wyman, Brunson's.
J. L. Falk, "
Frank Wyman, "
J. W. Wyman, Sr., "
J. W. Breeland, Lawtonville.
Nathan Johnson, "
J. W. Smith, "
B. F. Benkner, Lawtonville.
T. W. Hutson, Yemassee.
J. McP. Gregorie, "
Wm. Stokes, Early Branch.
J. H. Steinmeyer, "

HORRY COUNTY.

E. Norton, Conwayboro'.
A. H. J. Gailbraith, '
J. H. Grant, Bucksville.
A. G. Sloan, Little River.

KERSHAW COUNTY.

L. H. Deas, Camden.
D. L. DeSaussure, "
E. M. Boykin, "
A. W. Burnet, "
A. A. Moore, "
B. H. Mattheson, "
John McCaa, "
Thos. F. McDow, Liberty Hill.
John A. Glenn, Ridgeway, Fairfield County.

LANCASTER COUNTY.

J. H. Foster, Lancaster C. H.
M. P. Crawford, "
A. L. Strait, "
J. F. Mackey, "
J. H. Witherspoon, "
J. N. Nesbitt, Waxhaw.
J. C. Blakeney, Taxahaw.
C. C. Welsh, Flat Creek.
S. J. Welsh, "
R. S. Beckham, Pleasant Hill.
V. C. Armfield, Welsh's Mill.

LAURENS COUNTY.

Jno. A. Backsdale, Lancaster C. H.
Irby Dunklin, "
Thomas McCoy, "
R. E. Martin, "
T. E. Todd, "

J. P. Simpson, Lancaster C. H.
—— Blakely, "
—— Duvall, "
M. C. Irby, Clinton.
J. J. Boozer, "
—— Young, "
E. M. Caine, Milton.
C. A. Saxon, Tylersville.
L. P. Duckett, "
—— Seltzer, Roseboro'.
Jno. Hill, "
—— Parsons, Martin's Depot.
J. Q. Wilbur, Cross Hill.
E. G. Simpson, "
E. T McSwain, "
—— Miller, "
F. D. Coleman, Waterloo.
J. R. Smith, Mt. Gallaher.
—— Ballentine. "
Chas. Smith, Brewerton.
L. Martin, Line Creek.
J. S. Wolff, Goodgions.
L. Henderson, Centreville.
M. C. Cox, Pleasant Mound
J. A. Martin, "
Jno. A. Patton, Powers Shop.
S. S. Knight, "
J. A. Westmoreland, Young's Store
—— Edwards, Eden.

LEXINGTON COUNTY.

W. T. Brookier, Pine Plains.
J. W. Earle, Peak Station.
Jos. L. Shuler, Columbia, S. C.
Jno. Seabrook, "
Wm. Muller, "
Gerard Muller, "
J. W. Geiger, "
—— Alewine, Countsville.
A. R. Able, Riche's Store.
Scott Keisler, Gilbert Hollow.
E. S. J. Hayes, "
—— Crosman, Sorena.
J. T. Dent, Leesville.
W. L Addy, "
J. R. Kneece, "

T. S. Fox, Batesburg.
Ed. H. Strather, "
C. E. Leaphart, Lexington C. H.

MARION COUNTY.

J. C. Mullins, Marion C. H.
D. J. Watson, "
Dickson Evans, "
D S. Price, "
N. C. Murphy, "
S. A Miles, "
J. W. Singletery, "
Frank Monroe, "
E B. Smith, "
A. McLean, Little Rock.
T. J. Weatherly, "
J. H. David, "
Frank Bethea, Reedy Creek.
Andrew Bethea, "
—— Brown, Campbell's Bridge.
C. T. Ford, Mullins P. O.
Wm. Harrell, "
Alfred Walters, Nichol's Depot.
T. J. Dozier, Britton's Neck.
—— Davis, "
J. B. Hinnant, Scranton.
W. J. Davis, Lynch's Creek.
J. F. Pearce, Mars Bluff.

MARLBORO' COUNTY.

J. B. Jennings, Bennettsville.
J. T. Jennings, "
J. T. Jordan, "
J. H. Lane, Clio.
J. L. Napier, Parnassus.
J. W. Dand, "
M. C. Wallace, Brightsville.
R. F. Easterling, "

NEWBERRY COUNTY.

P. F. Ruff, Newberry C. H.
O. B. Mayer, Sr., "
O. B. Mayer, Jr., "
G. W. Garmany, "

J. K. Gilder, Newberry C. H.
Jas. McIntosh, "
W. R. Robinson, "
A. A. Cannon, "
J. C. Halfacre, "
L. B. Bates, "
J. H. M. Ruff, "
R. C. Carlisle, "
D. W. Patton, "
G. A. Setzler, "
—— Lake, "
R. T. Clark, Jalapa.
J. W. Falk, "
J. L. Speak, Kinard's Turnout.
J. R. Thompson, Silver Street.
J. O. Dickert, Chappell's Depot.
W. T. McFall, Prosperity.
D. H. Werty, "
A. F. Langford, "
J. B. Simpson, "
J. D. Bruce, "
J. R. Burly, Pomaria.
J. K. Chapman, "
J. David Cannon, Glymphville
J. P. Johnson, Liberty Hall.
Wm. McCarley, "
J. W. Tribble, Chappell's Depot
—— Miller, "
M. C. Renwick, Maybintou.

OCONEE COUNTY.

T. L. Lewis, Seneca City.
Saml. McElroy, "
John Hopkins, "
J. W. Spearman, "
George Yarborough, "
B. Mitchel, Walhalla.
W. F. Wright, "
B S. James, "
L. B. Johnson, "
Isham McCurry, Fair Play.

ORANGEBURG COUNTY.

J. C. Arant, Orangeburg C. H.
D. W. Barton, "
W. S. Barton, Orangeburg C. H.
R. W. Bates, "
W. T. C. Bates, St. Matthew's.
A. C. Baxter, Vance's Ferry.
O. N. Bowman, Rowesville.
J. D. Cleckly, Graham's T. O.
R. V. M., Dannerly, Willis' Mill.
M. J. D. Dantzler, Orangeburg.
A. C. Dukes, "
T. A. Elliot, "
H. N. Fair, St. Matthew's.
M. S. Grisset, Branchville.
D. L. Hildebrand, Centre Hill.
J. A. J. Hildebrand, "
J. A. K. Holman, Orangeburg.
M. K. Holman, Genoa.
J. C. Holman, Orangeburg.
A. J. Horger, Jamison's.
A. S. Hydrick, Orangeburg.
T. A. Jones, "
P. Judy, Branchville.
H. W. Kennedy, Orangeburg.
T. K. Keller, Genoa.
B. H. Knotts, Knotts' Mill.
J. P. Miller, ————.
G. J. O'Dom, Blackville.
M. J. O'Dowd, "
W. L. Pou, St. Matthew's.
T. J. Pou, Orangeburg.
A. S. Salley, "
M. G. Salley, "
J. W. Sandel, "
C. R. Taber, Fort Motte.
W. C. Wannamaker, Orangeburg.
J. G. Wannamaker, "
N. C. Whetstone, Branchville.
W. C. Whetstone, Orangeburg.
W. W. Wolfe, Genoa.
W. C. Wolfe, Orangeburg.

PICKENS COUNTY.

S. W. Clayton, Central.
T. W. Folger, "
R. J. Gilliland, Easley.
J. W. Quillen, "
G. W. Robinson, Liberty.

W. R. Hollingsworth, Liberty.
G. W. Earle, Pickens, C. H.
J. L. Crenshaw, Dacusville.

RICHLAND COUNTY.

A. N. Talley, Columbia.
B. W. Taylor, "
G. S. Trezevant, "
D. B. Miller, "
Frank Green, "
George Howe, Jr., "
L. K. Philpot, "
A. S Sylvester, "
H. D. Heinitsh, "
E. B. Turnipseed, "
P. B. Griffin, "
T. R. Centar, "
J. W. Parker, "
J. L. DeLeon, "
J. W. Pope, "
L. G. Huguenin, Gadsden.
J. W. McKenzie, "
Simon Taylor, Eastover.
Willis Keith, "
Edward Smith, Hopkins.
—— Alney, Blythewood, Fairfield Co.
Carroll Laborde, Littleton, G. & C. R. R.

SPARTANBURG COUNTY.

Wm. T. Russell, Spartanburg.
T. E. Nott, "
Jesse F. Cleveland. "
T. S. Means, "
Jos. Hill, "
G. W. Heinitsh, "
J. Nott Moore, "
M. Ward, "
H. Clawson, "
John S. Thompson, Pacolet Depot.
B. F. Bates, "
Thos. Littletjohn, "
H. C. DeBard, Welford.
T. S. Wright, Woodruff's.
M. Drummond, "
J. S. Poole, Cross Anchor
Henry M. Holmes, Limestone Springs.
W. F. Smith, Glenn Springs.
S. T. D. Lancaster, "
Chas. P. Miles, Hobleyville.
Wm. A. Harrison, Reidville.
—— Bennett, "
J. D. Westerveldt, Gaffney's.
J. N. Mendenhall, "
Geo. F. Walker, Glendale.
Geo. Dean, Campton.
Jos. Wofford, Cherokee Springs.
Jos. Thompson, Holly Springs.
L. C. Nesbit, Burnt Factory.
—— Peebles, Newnanville.
Wm Chapman, New Prospect.
Lee Smith, Cowpens.

SUMTER COUNTY.

M. J. Pringle, Sumter.
F. M. Beckham, "
J. H. Freeman, "
A. J. China. "
J. S. Hughson, "
J. J. Bossard, "
J. A. Boyd, "
H. Y. DuBose, Mechanicsville.
J. Dick, "
H. D. Green, "
J. A. Mayes, Mayesville.
C. L. Crane. "
J. H. Hudson, "
R. M. Muldrow, "
W. H. Reynolds, Spring Hill.
J. J. L. Miller, "
W. Wallace Anderson, Stateburg
W. W. Anderson, Jr., "
Mark Reynolds, "
J. M. Sanders, Lynchburg.
T. Wells, "
R. Y. McLeod, Bishopville.
R. E. Dennis, "
A. McLean, "
H. J. McLauren, Wedgefield.
W. J. B. James, "
E. J. Rembert, Hagood.
R. M. Moore, "

UNION COUNTY

H S. Beaty, Union C. H.
A. E. Fant, "
J. W. Posey, "
M. W. Culp, "
Theo. Munro, "
Miles Walker, Star Farm.
J. F. McClarency, Smiths Ford.
W. H. Sims, Goudeysville.
J. D. Orr, Mt. Moriah.
K. Littlejohn, "
J. E. Garner, Mt. Joy.
Robt Little, "
J. S. Layton, Cross Keys.
J. Hamilton, Cold Well.
George Douglass, "
James Renwick, Goshen Hill.
J. P. Thomas, Santuc.
C. J. Murphy, West Springs.
J. F. Norman, "
W. O. Southard, Jonesville.
W. F. Darlton, "

WILLIAMSBURG COUNTY.

W. S. Boyd, Salter's Depot.
S. Boyd, Scanton.
S. D. M. Boyd, "
J. N. Boyd, Salter's Depot.
J. R. Brockington, Indiantown.
J. S. Brockington, "
W. S. Brockington, Kingstree.
W. W. Brockington, "
J. L. Cunningham, Indiantown.
G. W. Crowson, Lanesboro'.
Z. R. Fulmore, Kingstree.
G. Gewinner, "
R. Henry, Gourdin's Station.
J. A. James, Indian Town.
D. M. Kelly, Lynch's Lake.
M. Kelly, Indiantown.
M Mullen, Gourdin's Station.
W. J. Pringle, Kingstree.
J. T. Pendergrass, "
S. F. Pendergrass, "
D. C. Scott, "
F. R. Steel, Black Mingo.
J. M. Staggers, Kingstree.
W. L. Wallace, Salters Depot.

YORK COUNTY.

J. R. Bratton, Yorkville.
A. J. Barron, "
John F. Lindsay, "
Hugh G. Jackson, "
Calvin P. Sandifer, "
A. P. C. Campbell, Clover.
Wm. E. Adams, "
Chs. Adams, "
Cohn G. Black, Black's Station.
Wm. Anderson, "
Fredk. Hambright, Whitaker.
T. C. Campbell, Clay Hill.
John G. Miller, "
R. H. Hope, Rock Hill.
Thos. A. Crawford, "
J. W. Fewell, "
Wm. White, "
Wm. Orr, "
Geo. W. Campbell, McConnellsville.
Jas. G. Smart, Blairsville.
John Crosby, "
Wistar Allison, Hickory Grove.
John P. Hambright, "
Robt. Darwin, "
Thos. Whitesides, "

LIST OF PHARMACISTS, APOTHECARIES AND RETAIL DRUGGISTS IN SOUTH CAROLINA.

ABBEVILLE.

W. S. Penny, Abbeville.
Dr. E. Parker, "
Dr. C. J. Prentiss, Donaldsville.
C. R. Moseby, Abbeville.
J. F. Townsend. Cokesbury.
M. C. Taggart, Greenwood.
Dr. E. R. Calhoun, "
Dr. F. G. Parks, "
J. A. Lomax, Cokesbury.
G. L. Connor, "
Dr. E. H. McBride, Abbeville.
Dr. J. C. Maxwell, Greenwood.

AIKEN.

H. H. Hall, Aiken.
W. W. Harbers, Aiken.
Dr. J. L. Lee, Langley Mills.
Dr. E. Steadly, "
J. L. Atkinson, Graniteville.
D. S. Ruff, "
J. E. Durr, "
M. E. Bowers, Aiken.

ANDERSON.

J. B. Sampson, Anderson.
E. P. Sloan, "
Dr. P. H. E. Sloan, Pendleton.
J. R. Williams, Anderson.
Dr. J. W. Spearman, Townville.
Dr. T. A. Hudgens, Honea Path.
Dr. F. K. Breazele, Belton.
W. H. Page, Townville.
Dr. P. A. Wilhite, Anderson.

BARNWELL.

Dr. G. R. Todd, Barnwell.
B. F. Brown, "
Dr. L. A. Wright, Bamberg.
J. Bellinger, Barnwell.
R. D. Holman, Graham's.
E. McKenzie, Williston.
J. F. Stokes, Blackville.
G. P. Harley, Allendale.
G. N. Phillips, Williston.
Dr. L. C. Stephens, Blackville.
Dr. Z. N. Smith, Johnson's.
Dr. J. B. Black, Bamberg.
Dr. N. J. Wolfe, Midway.
Dr. C. W. Erwin, Allendale.
Dr. J. P. Ott, Bamberg

BEAUFORT.

Dr. J. A. Johnson, Beaufort.
Dr. H. M. Stuart, "
F. F. Sams, "
S. B. W. Seabrook, Grahamville.
J. H. Clancy, Beaufort.
Dr. A. P. Prioleau, Beaufort.
Dr. T. B. Thompson, "

CHARLESTON.

G. T. Artope, Charleston.
J. Blackman, "
A. O. Barbot, "
Dr. H. Baer, "
N. J. Berry, "
A. M. Cohen, "
D. M. Greenland, "
W. N. Gibson, "
J. H. Graman, "
E. R. Hirt, "
N. W. Hernandez, "
Dr. E. H. Kellers, "
J. Lockwood, "
Dr. J. Linn, "
C. O. Michaelis, "
C. F. Panknin, "
C. E. Scharlock, "
C. F. Schwettmann, "

D. Vogt, Charleston.
G. W. Stroub, "
M. H. Collins, "
A. W. Schwacke, "
T. O. Aimar, "
C. G. Erckman, "
A. W. Eckel, "
G. J. Luhn, "
Dr. A. R. Spencer, "
H. W. Hummel, "
J. E. Torlay, "
Dr. W. A. Skrine, "
Dr. H. C. Guerin, Summerville.
I. J. Corby, Charleston.
W. H. Burgess, "
W. H. Roumillat, "
E. S. Burnham, "
Dr. Geo. Caulier, "
T. E. Newton, "
C. P. Aimar, "
A. Kroeg, "
W. H. Sawrey, "
P. Robertson, "
Dr. B. Rhett, Summerville.
F. Meanter, Charleston.
J. M. Horsey, "
G. F. Hedrich, "

CHESTER.

A. H. Davega, Chester.
A. Leard, "
Dr. R. H. Jordan, "
Dr. S. J. Babcock, "
J. J. Stringfellow, "
Dr. L. S. Douglas, Blackstock.
Dr. T. D. Marion, Richburg.

CHESTERFIELD.

W. C. McCreight, Cheraw.
T. E. Wannamaker, "

CLARENDON.

Dr I. E. Dinkins, Manning.

COLLETON.

Dr. C. Witsell, Walterboro'.
Dr. J. P. Minus, George's.
J. W. Klein, Walterboro'.
G. Pierce, "
Dr. F. P. Lewis, "
J. M. Klein, "
Dr. P. L. Moorer, George's.

DARLINGTON.

Dr. J. A. Boyd, Darlington.
Dr. —— King, Florence.
—— Lake, "
U. C. Roumillat, "
Dr. J. A. Mays, Darlington.
Dr. J. B. Jarrot, Florence.
Dr. J. E. Byrd, Timmonsville.
Dr. J. Auld, "

EDGEFIELD.

W. B. Penn, Edgefield.
Dr. T. J. Teague, Johnson's.
W. E. Lynch, Edgefield.
S. T. Hughes, "
J. G. Tompkins, "

FAIRFIELD.

Dr. W. R. Aiken, Winnsboro'.
Dr. J. R. McMaster, "
G. H. McMaster, "
Dr. C. H. Ladd. "
C. M. Clarke, "
R. S. Desportes, Ridgeway.
Dr. J. B. Palmer, "

GEORGETOWN.

Dr. T. P. Bailey, Georgetown.
L. C. Croft, "
B. Anderson, "
J. K. Hawkins, "
E. Wasden, "

GREENVILLE.

T. Earle, Greenville.
P. C. Westmoreland. "
Dr. G. L. Glazener, "
F. A. Walter, "
Dr. —— Wilks, "
D. T. Bacot, "

HORRY.

Dr. E. Norton, Conwayboro'.
Dr. J. H. Norman, "
F. N. Lake, "

KERSHAW.

C. J. Dunlap, Camden.
Dr. F. L. Zemp, "

LANCASTER.

M. P. Crawford, Lancaster.
Dr. S. Strait, "
Dr. T. H. Witherspoon, "

LAURENS.

Dr. J. E. Barksdale, Laurens.
Dr. J. P. Sampson, "
Dr. T. Wells, Lynchburg.
—— Martin, Laurens.
J. H. Traquham, "
J. S. Harston, Martin's Depot.
T. McCoy, Laurens.
Dr. C. Fripp, Martin's Depot.
Dr. W. C. Irby, Clinton.
Dr. T. Y. Harris, "
Dr. J. T. Craig, "
Dr. J. H. Henry, Laurens.
Dr. C. J. Finley, "
Dr. F. D. Coleman, Waterloo.
Dr. J. L. Speake, Martin's Depot.

LEXINGTON.

Dr. T. S. Fox, Batesville.
J. Davenport, "
—— Kyzer, Lexington.

MARION.

A. Irwin, Marion.
W. C. McMillan, "
Dr. D. S. Price, "
Dr. T. M, Monroe, Temperance Hill.
Jno. C. McMillan, Marion.

MARLBORO'.

Dr. A. J. Vidal, Bennettsville.

NEWBERRY.

Dr. S. F. Fant, Newberry.
W. E. Pelham, "
Dr. W. T. McFall, Prosperity.
Theo. Johnston, Newberry.

OCONEE.

R. E. Norman, Walhalla.
Dr. S. J. McElroy, Seneca City.
Dr. G. M. Yarborough, "

ORANGEBURG.

R. L. Berny, Branchville.
Dr. A. C. Dukes, Orangeburg.
Dr. H. N. Fair, St. Matthew's.
W. H. Wannamaker, Orangeburg.
Dr. J. G. Wannamaker, "
B. B. Lee, "
S. E. Reeves, "

ORANGEBURG.

G. A. Neuffer, Orangeburg.
J. W. Patrick, "

PICKENS.

J. B. Williams, Central.
Dr. G. E. Robinson, Liberty.

RICHLAND.

E. E. Jackson, Columbia.
Dr. C. H. Miot, "

W. C. McGregor, Columbia.
L. T. Silliman, "
L. G. Wood, "
H. B. Wiltberger, "
W. C. Fisher, "
E. H. Heinitsh, "
H. A. Ligon, "
C. S. Brown, "
T. Reese, "
S. M. Reynolds, "
Dr. T. P. Steele, "

SPARTANBURG.

H. E. Heinitsh, Spartanburg.
Dr. T. E. Nott, "
Dr. F. S. Means, "
C. L. Dobson, "
Dr. J. B. Little, "
W. S. Turner, Gaffney Station.
Dr. W. S. Dawkins, Spartanburg.
Dr. Jos. Hill, "

SUMTER.

Dr. J. T. Milter, Sumter.
Dr. N. J. China, "
N. Fleming, "
Dr. F. J. Mayes, Mayesville,
J. A. McKagan, Sumter.
Dr. M. J. Moore, "
T. M. Wilder, "
Dr. L. P. Earle, "
J. F. DeLome, "
W. H. Burgess, Charleston.
Dr. Z. T. Brooks, Mayesville.
Dr. N. H. Frierson, Lynchburg.
Dr. R. N. Dennis, Bishopville.

UNION.

J. M. Gibbs, Unionville.
Dr. R. T. Rawls, "
A. Irconig. "

WILLIAMSBURG.

Dr. J. M. Staggers, Kingstree.
Dr. S. D. Byrd, Mayesville.
Dr. J. S. Brockington, Kingstree.
Dr. T. F. Brockington, "

YORK.

J, C. Kay Kendal, Yorkville.
Dr. R M. Williamson, Rock Hill.
——— Campler, "
Dr. R. T. Allison, Yorkville.
Dr. J. May, "
Dr. T. C. Robertson, Rock Hill.
——— McCully. "
J. B. Johnson, "

ABBEVILLE.

W. M. Wakefield, Ninety-Six.
Dr J. L. Miller, Due West.
Dr. J. D. Bruce, Prosperity.

ANDERSON.

F. T. Wilhite, Anderson.
W. D. Simpson, "
T. F. Hill, "
Dr. S. M. Orr, "

BARNWELL.

Dr. W. C. Smith, Williston.
Dr. L. Brooker, "
Dr. J. J. O'Bannon, Barnwell.

BEAUFORT.

H. M. Stuart, Beaufort.

CHARLESTON.

R. A. Rowlinsky, Charleston.
J. Roumillat, "
Dr. F. B. Ilderton, Summerville.
M. H. Dingle, Charleston.

CHESTER.

C. A. Raysor, Chester.

CHESTERFIELD.

A. F. Waddil, Cheraw.

DARLINGTON.

Dr. M. S. Iseman, Darlington.

GREENVILLE.

C. W. Johnsou, Greenville.
P. R. Dashiel, "

KERSHAW.

F. M. Zemp, Camden.

LANCASTER.

Dr. J. H. Witherspoon, Lancaster.

LAURENS.

Dr. J. D. Parsons, Martin's Depot.

MARION.

Dr. J. H. David, Little Rock.
S. W. Monroe, Marion.

MARLBORO.

H. D. Mullins, Bennettsville.

NEWBERRY.

H. P. Tarrant, Newberry.

PICKENS.

Dr. G. W. Earle, Pickens.

RICHLAND.

W. R. Wells, Columbia.
R. C. Miott, "
C. C. Webb, "

UNION.

Dr. J. E. Garner, Unionville.

YORK.

Dr. A. P. Campbell, Clover.
Dr. H. G. Jackson, Yorkville.

Treasurer's Report of Receipts and Expenditures during the Fiscal Year ending October 31, 1881.

1880	DR.	
Nov. 1	Balance in hand	$1,380 61
1881		
June 15	Received from State Treasurer	1,000 00
Oct. 7	Received from Comptroller, warrant for	1,000 00
		$3,380 61
1880	CR.	
Nov. 11	Paid B. W. Taylor mileage and per diem	$ 6 00
"	J. F. Pearce mileage and per diem	22 00
"	J. F. M. Geddings mileage and per diem	16 00
"	H. D. Fraser mileage and per diem	25 00
"	P. A. Wilhite mileage and per diem	24 65
Nov 11	S. Baruch, mileage and per diem	18 20
Nov. 14	S. Baruch, expenses attending meeting of State Artificial Limb Committee	13 20
Dec. 16	J. F. M. Geddings, mileage and per diem attendance on Legislative Committee	16 00
"	H. D. Fraser, expenses delegate to Quarantine Convention held in New Orleans, December 7th, 10th	55 35
Dec. 22	W. H. Scott, for copying Bills in Columbia	3 00
1881		
Jan 7	Paid P. A. Wilhite, milaage and per diem	$ 21 65
"	B. W. Taylor, mileage and per diem	3 00
"	H. D. Fraser, mileage and per diem	19 00
Feb. 7	Edward Perry's bill	15 60
Mar. 1	Edward Perry's bill	36 00
Feb. 20	Telegrams, Expressage and Postage	5 35
Mar. 10	H. D. Fraser, for two quarter's salary as Secretary	125 00
Apr. 6	Rent of Post Office box, Key and Telegrams	3 27
Apr. 9	F. F. Gary, mileage and per diem	18 50
"	P. A. Wilhite, mileage and per diem	21 65
"	B. W. Taylor, per diem	3 00
"	H. D. Fraser, mileage and per diem	22 00
Apr. 12	James Woodrow, for Printing Report of S. B. H., &c	133 00
Ap. 26	W. P. Poulnot's bill, guarding Quarantine Station	17 50
May 7	J. C. Lacoste's bill, on account, guarding Quarantine Station	100 00
May 10	B. W. Taylor, expenses attending Extra Meeting	5 00
"	J. Ford Prioleau, mileage and per diem	28 00
"	P. A. Wilhite, mileage and per diem	27 65
"	H. D. Fraser, mileage and per diem	28 00
	Amount carried forward	$ 832 57

	Amount brought forward	$ 832 57
May 10	F. F. Gary, mileage and per diem	24 60
"	T. G. Simons, mileage and per diem	28 00
May 12	C. F. Panknin's bill for Vaccine Virus	15 00
May 17	J. C. Lacoste's bill guarding Quarantine	221 00
May 24	Edward Perry's bill	19 00
June 10	H. D. Fraser, one-quarter's salary as Secretary	62 50
June 13	L. B. Johnson, Vaccination in Oconee County	50 00
June 15	J. R. Bratton, mileage and per diem	17 60
"	F. F. Gary, mileage and per diem	19 80
"	B. W. Taylor, per diem	5 00
"	H. D. Fraser, mileage and per diem	23 00
"	T. G. Simons, mileage and per diem	23 00
"	P. A. Wilhite, mileage and per diem	22 60
"	J. F. Prioleau, mileage and per diem	23 00
June 17	C. F. Panknin, Vaccine Virus	5 00
"	J. C. Lacoste, guarding Quarantine Station	186 00
July 1	J. C. Lacoste, guarding Quarantine	42 00
"	H. D. Fraser, salary as Secretary, from June 10 to July 1	13 88
July 27	H. D. Fraser, for Four Sets Meteorological Instruments	310 00
July 19	T. G. Simons, expenses to Georgia Coast	14 45
July 23	H. D. Fraser, expressage on Meteorological Instruments	3 40
July 28	A. N. Talley, Vaccination in Richland	50 00
July 30	Edward Perry's bill	22 65
Aug. 2	F. F. Gary, mileage and per diem	24 60
"	T. G. Simons, mileage and per diem	18 00
"	H. D. Fraser, mileage and per diem	18 00
Aug. 27	Edward Perry's bill	5 60
Sept. 21	Jno. S. Hughson, Vaccination in Sumter	50 00
Oct. 1	H. D. Fraser, advanced for Sundries	26 88
"	H. D. Fraser, for one-quarters Salary as Secretary	125 00
Oct. 7	P. A. Wilhite, mileage and per diem	27 65
"	J. R. Bratton, mileage and per diem	23 80
"	B. W. Taylor, per diem	10 00
"	B. W. Taylor's expenses Meeting Quarterly Committee in Charleston, May 28, 1881	18 00
"	J. F. Prioleau, mileage and per diem	23 00
"	T. G. Simons, mileage and per diem	23 00
"	H. D. Fraser, mileage and per diem	23 00
"	F. F. Gary, mileage and per diem	24 60
Oct. 15	T. T. Robertson, Vaccination purposes in Fairfield	50 00
		$2,525 18
	Balance in hand October 31, 1881	855 43
		$3,380 61

HENRY D. FRASER, M. D.,
Treasurer Ex. Com. S B. H.

A KNOWLEDGE OF "BACTERIA," THE BASIS OF SCIENTIFIC HYGIENE.

BY C. R. TABER, M. D.

About two centuries ago, a man with partially silvered locks, and with face prematurely furrowed by contemplation, long and profound, sat gazing through an imperfectly constructed microscope. And as he sat, dead to all else but his own thoughts, his cheeks suddenly glowed, his eyes kindled, and his whole frame seemed rigid with intensity of emotion, for he then beheld what eyes had never seen before—to him there was a revelation. This man was Leeuewenhoeck, the father of microscopy, examining a drop of putrid water, and his discovery was Bacteria. Anterior to this important event, the serious problems of life, in their hygienic aspect, had awakened profoundest interest in the human mind, giving birth to various theories, expressive of innate yearnings and restlessness, but all of which, in turn, like the glowing, fleeting splendors of Autumnal foliage, dazzled, then died. The very limits of plausible conjecture concerning these absorbing questions seem to have been reached, yet no Ararat appeared for the weary feet of the baffled and panting pursuers of truth. Just then, in an auspicious moment, Leeuewenhoeck threw his pontoon across the broad chasm yawning between conjecture on the one hand and demonstration on the other, and, by the light of his splendid achievement, made way for the throng of enthusiastic workers which were to follow, and planted the first standard of an enlightened hygiene. Than this, what subject more suggestive, more impassioned in its appeal for consideration, that touches such diverse problems, difficult, it is true, yet not divested of a reasonable probability of their ultimate solution? Think of these minute organisms, the difficulties which surround their observation being so great as to situate them upon the confines of two kingdoms, the animal and the vegetable, and from thence to transfer them to the Algae and to the Fungi, yet in their seeming

insignificance how closely related to spontaneous generation, to fermentation, to the pathology of most deadly and contagious diseases, and still more comprehensively, to all that mysterious and fascinating "terra-incognita" which surrounds the origin and preservation of life. Wonder, then, if, to the naturalist, to the pathologist, to the philanthropist, to the sanitarian, and to the non-professional man of general culture, there has ever been presented so interesting a field of study and research!

Although Bacteria are sometimes so extremely minute as to defy measurement, even with the aid of the most powerful microscopes, yet they are found developed in liquids in great numbers, constituting at one time a delicate pelicle upon the surface; then again appearing as a slight fleecy cloud, or marshalled upon some objects contained in the vessel, or settled closely on the walls of the vessel itself. Now, if these turbid accumulations, or clouds of deposit, be examined with powerful magnifiers, their appearance at once changes, the invisible becomes visible, and myriads of minute organisms are seen, isolated or grouped, globular or linear in shape, some colored, some possessing motion, and others without either of these characteristics. The globular Bacteria will be found to comprise organisms, rounded, ovoid, and sometimes elongated into tubes. The linear Bacteria presents greater diversity of forms than the globular, and may be straight or twisted spirally. Some are cylindrical throughout their whole extent, and of variable, transverse and longitudinal dimensions. Others are small in the middle with rounded extremities, or swollen at one end only, all having great resistive power against external agencies, and being surprisingly tenacious of life.

That a general idea of Bacteria may be conveyed, it is better to examine in language divested of technicalities, in so far as is consistent with the subject, some of their most prominent characteristics, such as their origin and development, and the part they play in disease.

It was for a long time believed that Bacteria were composed of amorphous masses of protoplasm, or of solid rods,

but the researches of Hoffmann have shown that they have a true, cellular structure, the cellmembrane, however, being so delicate as to escape direct demonstration, yet capable of indirect proof, as with chemical re-agents for example, which seem to warrant the assumption of its possessing near affinities to the membrane of vegetable cells. Another very accurate observer dwells with peculiar emphasis on this important point, and in defiance of other observers, endorses the experience of Hoffman, and unhesitatingly claims that, with the aid of his powerful microscope, he has seen the veritable cell membrane of the Bacteria, in all its extreme delicateness and flexibility, enclosing a nitrogeneous substance, generally colorless, and possessing higher refractive power than water. Furthermore, that while in the smallest species of Bacteria this fluid is homogeneous in the largest species, he has found incorporated, and floating in this nitrogeneous substance granules of special character, also cillia, constituting a distinctive peculiarity of these minute organisms. In the language of Mr. Cohn's, who has described various movements of the Bacteria, almost all of which seem to possess two different modes of life, characterized, the one by repose, and the other by activity; he says that in certain conditions the Bacteria are excessively mobile, and when they swarm in a drop of water, they present an attractive spectacle similar to that of a swarm of gnats, or an ant hill. They advance swimming, then retreat, without turning about, or even describing circular lines. Now they advance with the rapidity of an arrow, again they turn upon themselves like a top, now they remain motionless for a long time, and again dash off like a flash. The long rod Bacteria twist their bodies in swimming, sometimes slowly, at other times with address and agility, as if to force for themselves a passage through obstacles, just as the fish seeks its way through aquatic plants. They remain sometimes quiet, as if to repose an instant, then suddenly the little rod commences to oscillate, then to swim briskly backwards to again throw itself forward. Afterward these movements are accompanied by a second movement,

analagous to that of a screw which moves in a nut. The vibrios, ("a species of Bacteria,") in the shape of a gimlet, produce a singular delusion by twisting themselves like an eel, though they are extremely rigid. Concerning the cause of these eccentric, but necessary movements of the Bacteria, is it strange that many theories have been advanced in explanation? One theory, based upon the supposed animal nature of these minute organisms, ascribed their movements to that voluntary motion which is seen exhibited in higher organisms. Another theory based upon the presence of the cillia, has attributed the movements of the Bacteria to the propelling agency of these delicate and pliant appendages. The whole matter however, appears to be most reasonably accounted for on the principle of the nutrition and respiration of Bacteria, for their demand for oxygen is very great, and all movement ceases immediately, either upon the absence of this agent, or in the presence of toxic substances. How to classify Bacteria, and thus confine them to their proper position in the vast scale of being has always presented difficulties insuperable, nor is this grievous embarrassment at all remarkable when we reflect, that despite the most earnest efforts of skillful observers an accurate differentiation between vegetables and animals, between Algae and Fungi, seems impossible, both of which classes having in a general manner so many characteristics in common. Yet it can be said, in the present state of knowledge, that Bacteria are cellular organisms of vegetable nature, and of all organisms the most widely diffused in the air, in water, in the interior of plants and animals, and in fact everywhere. The origin of these highly interesting incomprehensible and important Bacteria, was thought to take place in three different ways. First, it was contended by Pouchet, Bastian, and others, that these organisms are produced by heterogenesis, that is by creation from mineral, or organic substances, in other words by spontaneous generation. According to others the Bacteria originate directly from individuals like themselves, by one of the known modes of generation, fission, spores, &c. Again, Bacteria are believed to originate from organisms already

existing, and are simply states or phases of development of known species, of whose life cycle we are still ignorant. That Bacteria do multiply by fission, and do reproduce themselves by the formation of endogenous spores, is indisputably settled, and in the first instance it is accomplished in the following interesting manner: When a Bacterium of a larger species has grown nearly double its ordinary length, the contents of the cell becomes clearer in the centre, and a division takes place, separating it into two distinct portions by a partition, delicate at first, but soon becoming thick, and furnishing investing membranes to two separate parts of the original cell. But before the complete separation of the Bacterium into two distinct Bacteria is effected, the parent cell presents the appearance of the figure eight. The rapidity with which this change is wrought depends upon the nature of the medium, its richness in nutritive material, and its temperature. Sometimes the growth of the cells is so rapid under the stimulus of efficient pabulum that new cells are formed more quickly than they can separate, and they then appear ranged in chaplets. In other instances the new Bacteria are completely enveloped by a mass of glutinous substance. The circumstances under which Bacteria multiply, being a certain degree of temperature, and a sufficiency of nutritive material, we find that up to a certain limit variable with the species, the higher the temperature, the more rapid the fission of the Bacterium cells, and when the temperature is reduced to freezing point, multiplication is entirely arrested. Cohn says, that supposing that a Bacterium divides in two in the space of an hour, then in four at the end of the second hour, then in eight at the end of three hours, in twenty-four hours the number will already amount to more than 16,777,220. At the end of three days it will have furnished forty-seven trillions, at the end of a week, a number that can only be represented by fifty-one figures. To render these figures more comprehensible, let us seek the volume and weight, which may result from the multiplication of a single Bacteriam. Take for instance, the individuals of the most common species of the rod Bacteria, presenting the form of a short

cylinder, having a diameter of a thousandth of a millemeter, and in the vicinity of one five hundreths of a millemeter in length. Let us represent to ourselves a cubic measure of a millemeter; this measure would contain, according to what we have just said, 633,000,000 of rod Bacteria without leaving any empty space. Now at the end of twenty-four hours, the Bacteria coming from a single rod, will occupy the fortieth part of a cubic millemeter, but at the end of the following day, they would fill a space equal to 442,570 of the cubes, or about half a litre. Let us admit the space occupied by the sea is equal to two-thirds of the terrestrial surface, and that its mean depth is a mile, the capacity of the ocean will then be 928,000,000 cubic miles. The multiplication being continued with the same conditions, the Bacteria issuing from a single germ will fill the ocean in five days.

Tho' Leeuewenhoeck found yeast to be a mass of globules he had no idea that they were living organisms, and it was not until Schwann demonstrated this fact that the way was paved for the subsequent experiments of the great Pasteur, of France. The role played by Bacteria is highly interesting, of which a familiar example is the acetic fermentation of alcohol, a phenomenon long known as that by which wine is converted into vinegar and which may occur in the following manner: If a single germ be placed upon the surface of a liquid, of one square metre in size, in less than forty-eight hours the whole surface will be covered with a veil, uniform in structure and extremely delicate. If through this veil, at first smooth, then subsequently wrinkled in appearance, a rod be plunged, causing a considerable rent to be made upon the withdrawal of the rod, the broken surface is immediately repaired by these wonderful organisms, whose expansile capacity seems incalculable. Here we recognize in the formation of this veil what is known as the mother of vinegar. We will not forbear reference to some of the splendid successes of the illustrious Pasteur. Ravages had occurred repeatedly among the French wines owing to some peculiar agency which rendered it impossible to predict whether or not the wines would become acid or bitter, but specially

those which were exported; the consequence was that the wine trade became restricted, and heavy losses were frequently entailed upon the wine growers. Pasteur grasping all that had been discovered concerning the organisms with which the atmosphere is freighted, went immediately to work with a view of ameliorating the sad condition of his countrymen. He traced the cause of the acid fermentation to the presence of living organisms, then ascertaining the degree of temperature which destroyed these ferments of disease, and that the same low temperature did not injuriously effect the wine, he resorted to the simple expedient of heating the wine to fifty degrees, centigrade, by which process he destroyed effectually the noxious germs, rendered the wines stable in character and saved his country the loss of millions. But the work of Pasteur went on. Finding that oft times, vinegar, the product of acid fermentation of alcohol did not retain its permanency, but most unaccountably became putrid and worthless, he essayed to find out the reason. His success was complete, and inasmuch as the putridity of the vinegar arose from the presence of Bacteria in the atmosphere he had only to keep these life germs from contact with the vinegar in order to preserve it. From the study of the microgerms in their destructive relations to wine and vinegar, Pasteur essayed to master a singular disease which threatened to ruin the silk husbandry of France: It was found that the wonderful and useful silk worm went through the process of spinning automatically, when indeed it had nothing to spin. This strange condition being brought about by a minute parasite which spread itself throughout the body of the silk worm, and ultimately took complete possession of the sack which should contain the viscid matter from which the silk was to be elaborated. How irresistibly we thrill with admiration in marking the beautiful and the effective manner in which this difficulty was solved. Step by step Pasteur followed this parasite in its destructive career, until at last he discovered the precise phase, in the development of the silk worm, when the disease by which it was ruined could be absolutely destroyed. It is said that Pasteur restored to

France her silk husbandry, saved thousands of his countrymen from ruin, set the looms of Italy to work, but unfortunately, from these magnificent efforts he emerged a paralytic. While we speak of the career of Bacteria in their effect upon wine and vinegar, we must not forget that it is as the supposed cause of most fatal diseases that they derive their greatest importance. Remembering how generally diffused they are throughout the different media of air, water and matter, and with what great facility they are conveyed from place to place, sometimes by causes scarcely appreciable, not as isolated organisms only, but in countless myriads, it is not surprising that we should find them invading the human body, and by their extreme minuteness and powerfully destructive energy, constituting a prolific source of disease. In the inferior animals, whether it be spleenitic fever, rinderpest, or charbon, the microscopist has invariably found some species of the Bacteria, to which the cause of the disease has been ascribed, and which has constituted the element of contagion.

In Septicemia, a disease at once suggestive of the long suffering and the death of our Chief Magistrate, Garfield, there has been found, notwithstanding the existence of much counter-authority, yet proof enough of the existence of Bacteria. Seidilot, struck by the views of Borseiri and Gaspard upon the nature of septic blood, concluded, after a series of experiments, that the poisonous element present in the vital fluid was of Bacteric origin. Davaine, in order to find out whether or not this Bacteric poison could regenerate itself, injected septic blood into the veins of healthy animals, and from this experiment he arrived at the conclusion, that putrid substances do not go beyond the animal into which they are injected, and that putrefaction acts upon the animal economy as a poison. Kloebs proved the presence of Bacteria in the putrid matter of gunshot wounds; and Pasteur was the first to announce the parasitic nature of septicemia. Further reference to authority might enhance the interest of this subject, but will not establish more conclusively what is considered as the cause of this insidious disease, for Bacteria are

constantly present in putrid blood, and septicemia is non-existent in the absence of these micro-organisms. As in septicemia, so in small-pox, we find somewhat the same conflict of opinion respecting their parasitic nature, but with this difference, however, that the dispute is not concerning the presence of Bacteria, but upon which one of the two species of Bacteria it depends, for micro-organisms possessing all the characteristics of Bacteria are found in the pustules of small-pox, in the kidney, liver, spleen, lymphatic ganglia, and in the blood. In scarlet fever, Bacteria have been found in the blood of patients, both prior to death and after, and when this blood, freighted with organisms, and diseased, was injected into rabbits, death was the invariable result; and an examination of the blood of the rabbits established the existence of Bacteria just as was originally in the diseased human blood, though somewhat larger. The blood of measles has been found conveying extremely minute and flexible organisms—causing death when injected into the veins of inferior animals. Tigri first discovered Bacteria in a patient dead with typhoid fever; and there have been also found, by Meguim, in the blood of horses which were assailed by a disease whose every characteristic was precisely like that of typhoid fever, and from which they died. We find this corroborated by Cozel and Feltz, in their experiments with inoculation. They found that the diseased human blood used in their experiments produced in the rabbit the train of symptoms characteristic of typhoid fever, even to the extent of causing the pathological changes in the glands of Peyer. Bacteria have been found in ulcerative endocarditis, taking complete possession of the valves of the heart, which themselves were literally covered by these parasites—also, in relapsing fever, which, according to Cohn, owes its occurrence to the presence of Bacteria, and who found them during the febrile paroxysm only, and that they disappear entirely upon the establishment of convalescence.

According to researches which appeared in eighteen hundred and seventy-three, the pus of pyemia, or of purulent peritonitis, inoculated, produced diphtheria because of the presence of Bacteria; and all investigations of this frightful

disease, from a parasitic point of view, since the time of Tigri, corroborate the above facts, and although Bacteria are found in the false membranes of this disease, yet the causal relation between these organisms and diphtheria, however probable, has not been absolutely established. The average reader is perhaps mindful of the long and heated controversy concerning the cause of malaria, which was thought to exist under apparently so many opposite conditions, that all correct reasoning in the premises seem fraught with unsatisfactory results, and to the oft-repeated inquiry, of "what is malaria?" no correct answer could be given until now. All honor to Professor Klebs, and Tommassee Grudelli, for their valuable and successive investigations. The pontine marshes around Rome have long been the recognized home of malaria, in the most concentrated and deadly form. There these two distinguished men located themselves for the purpose of investigating this invisible, intangible and subtle cause of disease. First, they diluted the marshs' soil with water, they then injected this watery extract from the soil into inferior animals, with the result of producing malarial poisoning. Secondly, to determine, by exclusion, which element in the extract created the disease, they resorted to what is known as fractional cultivation, and in order to isolate the active agent of malaria, they resorted to filtration. Thirdly, by injecting with the water, then with the isolated organisms, and by comparing the results they found that the existence of malaria depends upon the presence of micro-organisms, exceedingly minute, resembling long twisted threads, and whose viability was at once destroyed by the exclusion of air. The injection of these organisms, which they have named "Baccilli malariae," into healthy animals, invariably gave rise to intermittent fever, with enlargement of the spleen. The proof of these facts does not rest entirely upon the conclusive demonstrations of the two foregoing professors, for Marchiafa, in later experiments, performed at Rome, corroborated the dictum of his predecessors, and proved the existence of the Baccilli in the spleen, the marrow, and the blood of three patients who died of pernicious fever. We cannot, therefore, longer doubt

that malaria depends upon the presence of the Baccilli, which, when injected into man and animals, invariably produce malarial fever, and the malaria so produced by these artificial injections is caused by organisms existing in the soil at a time when the fever had not yet occurred. So much for Bacteria in some of our most fatal diseases. Let use see whether these discoveries have exercised any influence upon surgical practice. From the time Therapeutics became scientific in character, marked importance has been attached to the accurate study of liquid secretions which are eliminated from the human body, either by accidental solution of continuity, or which are an inevitable sequence of surgical procedure. And while much less consideration than formerly is bestowed upon particular methods of operative surgery, the most vital questions now are those touching the pathological physiology of solutions of continuity.

In the past we looked to chemistry to solve the mysterious phenomena of cicatrization. In the present we turn to the microscope, or rather to the results of microscopic study, for safe guidance, and more reliable interpretation.

If flesh be cut, in the course of fifteen or twenty four hours Bacteria will appear upon the surface of the wound, for it seems that during the first hours, subsequent to the division of the tissues, when only a yellowish pink serum appears, is not favorable to the rapid development of these Parasites, but later, when the blood corpuscles are broken down and free suppuration succeeds—then it is that these inferior organisms, increase, with such wonderful and destructive rapidity. This marvellous development is particularly striking, when pus, the product of inflamation, is of unhealthy character, then it is that the Bacteria, arrange themselves in little chains, and are almost motionless. It would be strange indeed, if progressive surgery, had not eagerly and successfully utilized, even the present limited knowlege of Bacteria, for the curtailment of human suffering. Alphonse Guerin, remembering how Pasteur filtered and purified the air, by passing it through cotton wadding, inaugurated a system of practice in surgical diseases, from which, he realized the happiest results. By

the simple process of covering wounds, effectually, with carded cotton, he succeeded in keeping the germs of disease from contact with the wound, and this superadded to the uniform temperature, and continued pressive, wrought surprising results. Lister governed by the same idea of Bacteria, stands forth in bold relief, as the originator of the Carbolic system. By operating under a cloud of carbolic spray, and by applying upon the wounds such dressing only as has been long submitted to the action of this powerful antiseptic agent, it is said by Lister, and upon the authority of eminent eye witnesses, that the results surpassed the most sanguine expectations, and that cases in which formerly the immediate union of incised wounds, by what is known in surgery as the first intention, could not be reasonably expected, now, under the Listerian system, takes place, to the wonderful diminution of surgical diseases arising from purulent infection, to the absence of other serious complications, and to a remarkably decreased ratio of operative failures.

Not alone is it for an individual, nor for a community, nor for a single people, to rejoice at this great and beneficent stride in the art of surgery. Like the discovery of the immortal Jenner, it touches humanity at large. In glancing back over the field we have traversed, we find that we have endeavored, in an unscientific, but general manner, to outline the principal characteristics of those wonderful organisms—Bacteria; That while studiously avoiding everything controversial, we have, with the view of conforming the attention to these organisms alone, been content to consider the Bacteria as they appear, in the complex economy of nature, as synonymous with parasites, germs, ferments, and contagia, all of which being the supposed cause of most fatal diseases. We have spoken of their structure, their origin and development, their classification, their physiology, and the part they play in fermentation, and in disease. And, in doing so, we have indicated the vast benefit which has accrued to the world, and how much is yet to accrue from a mastery of Bacteria. It is to be deplored that so far as our investigations have gone we

find science still groping in the twilight, with careful steps, through a vast unexplored region, whose marvelous features astonish at every step, and though she may outline the larger but less important feature of the landscape, she does not even now, suspect the numerous important, and endless detail, by which she is surrounded. No doubt this twilight, painful and discouraging in the extreme, and which has succeeded to ages to absolute darkness, may be gradually rolled back, that the cheering blaze of noon-day may enter. No doubt that with more powerful microscopes the progression will be accelerated, and just as Pasteur and Koch and the Italian Professors, have unraveled the long hidden mysteries of many of the most fatal diseases, so may our knowledge of Bacteria become so precise as to justify the expectation of a complete and ultimate triumph of enlightened Hygiene, when the whole catalogue of contageous diseases may be forced to lay their implements of war at the feet of man, the great subjugator. There is nothing from which human nature shrinks more instinctively than from the unknown, the mysterious, invincible hand, which strikes, we know not how, or when, or with what power—and yet the human race is just in this distressing dilemma, surrounded on all sides, assailed from every quarter by enemies unseen, insidious and destructive. Nor is this warfare of to-day—it has been coeval with man—it has increased commensurately with his increase, and has stood ever at his side, a fearful phantom. What means the sobbing along the silent corridors of the past, if it be not the piteous confession of man's defenselessness against his unseen foes? It is against these very Bacteria, that scourge us with unseen thongs, at home, at field, in hospital, and upon the seas—that Hygiene must sooner or later concentrate her forces. At present she is in her infancy, leaning upon empirical facts, and limping along in her imperfect efforts to achieve her glorious ends, and such a consummation is not for the present. But when the thinking world—the influential, earnestly working, dominating world—feels in its heart the grand mission of Hygiene—when it catches the burning truths, which, like Alcestes' arrows, kindle as they fly; when she utilizes them in

the spirit of a broad, comprehensive, practical Hygiene; and when, leaving her narrow confines, she appreciates the affinities of vice, of crime, and disease, then, and not until then, can Hygiene stretch forth her ample and protective arms, and indeed be an Ægis for the human race.

ON THE SCARLATINOUS EPIDEMIC OF 1881, AT CHARLESTON, S. C.

BY J. FORD PRIOLEAU, M. D., CHAIRMAN OF COMMITTEE ON ENDEMIC AND EPIDEMIC DISEASES, OF THE EXECUTIVE COMMITTEE STATE BOARD OF HEALTH, S. C.

Before proceeding to speak of the epidemic of Scarlatina which visited the City of Charleston during the winter, spring, and summer of 1881, we desire to say something about this disease, especially as the intention of the State Board of Health is the dissemination of knowledge of a medical kind which may perhaps be of interest to the people, and tend to their benefit. Papers coming from this Board should be addressed to the non-medical public, for although partaking of the nature of such articles as usually appear in the pages of the Medical Journals, yet they do not require to be so technical. Availing ourselves of this latitude, in our remarks upon Scarlatina we may omit the names of the authorities for some of the facts, but we have no hesitation in placing under contribution the most prominent authorities of the medical profession, quoting freely from such as Thomasin, Ziemssen, Niemeyer, Roberts, Aitken, Watson, Graves, etc., as it may suit our convenience.

Scarlatina occupies a prominent place among the exanthematous diseases, and derives its name from the rash which characterizes it, having been so designated by the great Sydenham in 1670, who obtained this term from the Greek word to bud, to flower, to effloresce. This class, the exanthemous, includes measles, rotheln, varicella, variola and vaccinia, each one of which producing modifications in the appearance of the skin, and changing in color or otherwise the expression of the countenance of the person affected. The diseases embraced in this class, although entirely distinct from each other, have much in common, but are much further removed from all the other diseases than from each other. Each springs from a cause special to it alone, each is marked by

well determined and pronounced phenomena, modified but slightly by its surroundings and the individual peculiarities of constitution, inheritancy, etc., running a definite course to its exhaustion, and is thus limited in duration, and cannot be arrested, although possibly ameliorated by medication and attention; each is distinguished by an eruption peculiar to it alone, attacking the same individual but once, having a predilection to affect or localize itself in some particular portion of the body or in some one of the tissues, a proclivity to attack those of a certain age, apt to be followed by secondary train of symptom, chronic in its nature, the eruption preceded by heat, by increased cardiac impulse both in force and frequency, and each attacking those only who have a proclivity to it.

What the primitive origin of these exanthemathous diseases was it is hard to say, probably far away in the distant ages, long before the cognizance of man, the initial cases took their rise; but by what circumstances produced, or by what evolution their spontaneous generation occurred, will probably always remain unknown; at the present time, without denying that a like cause which then existed, may produce a like effect now, if now acting, we must say that each of these diseases is produced by some virus generated only within the system of the sick. We know of no spontaneous origin now, and the idea, as for instance, of small-pox arising without prior exposure to it, spontaneously in a community, is repugnant to both the experience and the observation of centuries. Of the nature of this virus or toxic principle formed within the economy of the sick, contaminating every portion of the tissues, we confess to ignorance. We are not prepared to deny that the so-called "germ" may be found, we know it only by its effects, and by the inferences which may be adduced from these effects; experience has thus alone informed us of certain features connected with it. We have every reason to believe that this noxious agent when thoroughly developed is of material or solid nature; thus Dr. Sanderson who "after a very critical examination into the physical properties of contagion, gives a summary of his

analysis in which are the following statements: One doctrine has been advanced which seems to us so important that we may venture to call it fundamental. The fundamental inference referred to is this, that every kind of contagium consists of particles. * * * On grounds which have been stated we regard it as probable that contagious particles are spheroid, transparent, of gelatinous consistency, of density nearly equal to that of the animal liquids in which they float, and that they are mainly, but not exclusively, composed of albuminous matter." Thus also we have every reason for believing that the matter is not vaprous or gaseous, for if so we cannot understand how the poison could cling so tenaciously to the clothing and other articles, for the length of time which it has been known to do; and how to account for the sluggish dissipation, or the general non-dissemination of the poison through the atmosphere. If volatilized, the contaminated atmosphere, equally affected in its every part, would probably affect equally each individual exposed, and this we know is contrary to general experience. We also infer what we also observe in vaccinia that the most minute portion of this poison is capable of producing the most profound attack at times; it is but reasonable to infer, however, that a much larger portion may proportionally overwhelm the recipient. We also infer that decomposition only destroys its infectious properties, and that much time is required to effect this decomposition.

The avenues through which these diseases enter the system are generally through the respiratory tract, probably through the lungs, but that there are exceptions to this law is recognized, for the poison of vaccinia at least requires that some abrasion of the skin be present. We know of no instance in which it has been contracted by inhalation.

The diseases may be spread in different manners through the community ; to these ways or methods medical terms have been applied to meet the exactitude and precision which the medical science demands. These terms have even gradually crept into the common language of the people, and are now employed in such a loose manner that they have

in a great degree lost their original signification. When a disease is transmitted, by, or through the food, the drink, or by articles, the term infection is employed. If by the touch immediately, as in the handling of the sick, or through the medium of other articles used by the sick, or which have been in the vicinity, the term, contagion, is employed. It is not of much importance for us to trace the history of Scarlatina. In 1610 an epidemic with a red eruption raged in Spain—passing to Naples in 1816, in 1620 to Italy; in 1625, to Germany, to 1640, to Utrecht; to 1670, London. Prior to this (1670), the disease was regarded but as one of the several varieties of measles, and was probably so described by the Arabian, the Greek and the Roman physicians. Hilderbrand and Frank state that Ph. Ingrassias recognized the distinction between this disease and measles, a distinction seen by the people themselves, who spoke of it as Rossalia, or Rossania from "rose red." About the commencement of the seventeenth century, undoubted epidemics of Scarlatina occured in Europe; Sydenham, in those which prevailed in London, between 1670, and 1675, was the first to distinctly detect and to establish the difference between measles and scarlatina, and bestowed upon the disease the special name of "Scarlatina." Since that time it has been called by different names, but the distinction between them has never been lost sight of. The profession has throughout the civilized world adopted Syndenham's name, "Scarlatina," which with them signifies all the forms and varieties of the disease, without reference to its severity, while the people, misled somewhat by the termination of the word, used erroneously the term Scarlatina, as significant of milder varieties, and apply the term Scarlet fever to the more severe.

The epidemic which Sydenham described and which enabled him to draw the line between it and measles was so mild that he says, "it scarcely deserves to be considered a disease," yet within a year or two of this, Morton treating the continuation of the same epidemic, speaks of it as most severe, "numbers of children having lost their lives." Since the time of which the distinction had been made numerous epidemics have

prevailed in widely different places, countries, and circumstances: In the torrid zone, in the hard winters of Norway and Greenland, and throughout the more temperate regions of Europe and America, these recorded epidemics have exhibited an inconsistency in severity, and an irregularity of contagion such as is presented by no other one of the diseases. Each epidemic has varied in malignancy, in localization, in extent, at one time showing a proneness to affect one organ, as the brain, or the throat; at others to affect some other organ. Obeying some occult law, which at present seems past—finding out, affecting one locality most severely, passing over entirely another in the immediate neighborhood; for years affecting one place only, with a few yearly cases, to be succeeded by a most violent outbreak, the causes of which cannot be ascertained; affecting at times almost exclusively the better portion of the inhabitants of a city, to the almost entire exclusion of the poorer classes, and then perhaps making its visitation upon the indigent and the impoverished. Affecting at times the higher, the dryer, the more cleanly, and most thoroughly regulated portion of a city, where sanitary measures receive the greatest attention, and passing over the low, the swampy, the crowded portion of the same place kept in the most filthy condition and without any sanitary precautions whatever, whose inhabitants ill fed, badly clothed badly housed, and crowded, would apparently have invited the disease.

Every portion of Europe has repeatedly felt its visitation, as has most of the civilized world. In several of the larger cities, it has never entirely disappeared.

Iceland was visited by the most terrible epidemic in 1827; in 1874 it appeared in Greenland; in 1848, in Asia, particularly in India; and in this same year also, the African continent; in 1835, North America; in 1829 South America, where it appeared as a pandemic; not until 1849 was it carried to Australia; it has not yet been carried to Japan, and some of the Pacific Islands.

More nearly concerning us—we read in Copeland's great Dictionary, "that the scarlet fever has prevailed in the United

States at times from its first settlement ; it prevailed during a wet cold season—in May, 1735—in New Hampshire, under the name of throat distemper, and proved extremely fatal to children. The symptoms were a swollen, sore, throat, with white or ash colored specks, an efflorescence on the skin, great debility of the whole system, and a tendency to putridity. Of the first forty patients attacked, it is said not one recovered."

It was described by Dr. Rush in 1783 ; in 1793 it prevailed in various places in the United States—in Kentucky and in Ohio, between 1791 and 1808, according to Dr. Drake, under the name of " Putrid sore throat," and has never since been absent from the Mississippi Valley, and has prevailed continuously at some point or other throughout the Atlantic and Gulf States,

From the collated observations of many centuries, we have the evidence that all of these exanthematous diseases are propagated but from transmission, each case being contracted from one of the same kind, but at times from want of the proper evidence, the connection may not have been possible to trace.

It would be of interest here, if space permitted, to review what has been ascertained of the germ propagation, and to notice the part which the Bacteria play in the production of these diseases—we are, however, compelled to pass by much that may be said—we may, however, remark, that " Dr. T. G. Scatterweight, in a very thorough and able paper on " the present condition of the evidences concerning diseased germs, —read before the section on Sanitary Science of the International Medical Congress, at Philadelphia, 1881, submits the following conclusion with regard to the present status of the question :

"I. That as far as inquiry has been made as to the nature of the active principle in infectious diseases, it is probable that a certain number, the matter is particulate or molecular in form.

II. That in regard to the causes of septicæmia, pyæmia, puerperal fever, erysipelas and hospital gangrene, and those of

cholera, vaccine diseases, the carbuncular diseases of man and animals, typhoid and relapsing fevers and diphtheria, there is not satisfactory proof that they are connected with minute vegetable organisms.

III. That the real nature of these causes is still uncertain ; We must confess however, that we are not quite satisfied with these conclusions, but await with much interest the address which we understand the celebrated Prof. Klebs has just read to the Medical Congress, recently held in London, embodying as it is said to do all the reliable (?) information which has been accumulated upon these mooted points.

It may be a matter of something more than mere curiosity, and one that the community may be interested in, to state somewhat in detail the facts upon which the propagation of scarlatina is accepted, and a few of the characteristics connected with it. These are so patent to medical men, that we feel that we must make some apology for their introduction.

Turning to Thomas' article in Ziemssen's Cyclopedia of the Practice of Medicine, as one of the most recent authorities, and the most easy of access, we find an excellent digest upon the subject, from which we shall quote freely as we proceed—also using the article of Dr. A. H. Johnson, in the ninth annual report, Massachusetts State Board of Health.

Before specifying individual instances, we may say, that we see its transmission evinced:

1. By the rapid spread of the disease, where an individual suffering with it is introduced into the large children's hospitals which have been established in the greater cities of Europe.
2. In a less marked manner, where one sick with it, has been brought in contact with a large family of children.
3. Where clothing and other articles taken from the sick are carried to healthy communities.
4. The exemption of certain populous localities to which the disease has never been conveyed.
5. The protection which the isolation of the well gives.

6. The protection which the complete isolation of the sick extends to the well, and the direct production of the disease by inoculation.

Examining these points in detail, taking the last as the most important, we see that Thomas states that Rostan produced the eruption seven days after inoculation. "Miquel reported to the French Academy, that he had inoculated a number of children who had never had the disease, with the contents o vesicle from scarlatinous patients: thirty hours after there appeared at the place of inoculation a red areola, which corresponded in every respect to the scarlatinous eruption; this redness increased for three days, and then disappeared; on the fifth the inflammation was not traumatic, for a second inoculation in the same individual had no effect. It appears too, that children who had been successfully inoculated were not affected subsequently, when there were abundant opportunity for infection." Stoll inoculated by introducing the epitheliel cells of the scarlatinous patient under the skin of the well, and successfully. "Cose and Feltz introduced a small quantity of scarlatinous blood under the skin of sixty-six rabbits: of these, sixty-two died in the course of from eighteen hours to fourteen days, having had high temperature, then diarrhœa and emaciation; and the remaining four only recovered after an intense fever. An examination of the blood revealed a peculiar aggregation of the red blood corpuscles with other changes, Bacteria and Bacteridia were found first in the blood of the scarlatinous patients who had furnished the inoculated matter."

It does not appear that a lengthy time of exposure is necessary for infection. According to Palante, a mother remained but a few moments exposed to infection; she then traveled a distance of six miles, and the disease appeared in her children in a few days. Hening says that a child, associating with another but a short time, who had been sick six weeks before, contracted the disease four days after. It can be contracted from articles which have been in the neighborhood of the invalid. Richardson knew where it had been transmitted by a letter to a house several miles away; Maclagan, by a woolen

shawl; Moore, by a piano; Ozle, by soiled linen. Another case was attributed to two old rocking chairs with torn cushions. Hilderbrand, to an old coat, previously worn on visiting scarlatinous patients, which had been put away for eight months. The first case in the Bahama Islands—"that of a child who had been successfully isolated on the continent, occurred on the 20th of December, after the patient, according to Duncome, had remained in a region entirely free from the scarlatina poison since October the 13th; infection consequently was probably caused through the medium of materials which had been brought over from the continent." Mason Good, to a box of toys; Murchison, to a lock of hair; a few cases to a letter; Tscharner, a piece of bedding; Behrend, to a bed-pan used fourteen months before; Heslop, to the mixing of the clothes of the sick with those of the well in the wash. Bell thinks that milk may convey the poison; also, Taylor; of twelve families supplied with milk from one house, "six cases occurred in rapid succession;" the milk had stood in a kitchen which had been before used as a hospital for scarlatinous patients.

The well can be the medium of transmission. Thomas saw an instance in which a nurse gave the disease to a child in three hours. Willan saw the same. Sims and Williams, several cases where midwives communicated it to lying-in women. Murchison says that several physicians stated to him that they had, they believed, transmitted the disease to women in the like condition by their clothing. Pyle tells of a healthy female teacher, nursing a scarlatinous patient, who carried the disease to her residence. Rhen, a grandmother conveying the disease from Stuttgart to Hanau. Koshn thought it was carried by a physician. Michel saw it spread by the return of a father from an infected dwelling. "In an epidemic near Eidsvold, in Norway, observed by Thoresen, the *intense cold* prevented the children from leaving the houses, and the majority of infection (in twenty-four places) could only have taken place through the medium of healthy individuals." Zun thought it was communicated by a horse; others, by dogs, cats, swine, and other domestic animals; Hein saw it taken

from a dog which had lain in the same bed with a scarlatinous child. In the Trans. St. Petersburg Medical Society there is the account of a cat having the general characteristic eruption, with angina. Lethely speaks of the frequent occurrence of scarlatina in swine, etc.

As to the tenacity of the contagion, Murchison says a dwelling is infected for several months; Benedict, a dwelling may be infected for two months; Richardson, after five months; Hening and Pyle, that the contagion lasted for several weeks; Ozle, for at least ten; Hilderbrand's coat retained its contagiousness for one year and a half.

Dr. A. H. Johnson, in his excellent article upon scarlet fever, (Ninth Annual Report Massachusetts State Board of Health,) says: "Visiting the body of one dead from scarlet fever." On this point our correspondent from Winchendon writes as follows: "In the early part of my practice four children in one family, being the first cases that had occurred in the town for several years, died. There was a school of about sixty scholars near by. The clergyman who attended the funeral of the first who died, being chairman of the school committee, stopped the school; and out of forty who attended the funeral, thirty-seven took the disease." From our correspondent at Webster, we learn that "an only child, a girl of eight years old, died from scarlet fever. The burial was public, and at the end of three weeks, sixteen of the children who attended the funeral were down with the disease, and four of them died." Our Springfield correspondent states that "a man and wife from Connecticut came to this city to attend the funeral of a child dead from scarlet fever. They remained but a few days, and returned home. In a week their own child was taken with the disease. There had been no cases in this town previous to this, and none followed." From Rockport our correspondent writes: "The corpse of a person dead from scarlet fever, brought here from abroad, was exposed in the church previous to interment. There was then no case in town. A few days after, one who attended the funeral, and was near the coffin, was struck down with the disease."

The caprices of scarlatina, for I can use no other word, are

very perplexing—ever varying. Generally the hygeinic condition of the place, and of the family, the dampness of the soil, the imperfect sewage, the crowding of the inhabitants, deficient nourishment, the exposure, etc., vastly increase the mortality. Again, quoting from Johnson:—"Malden contains a rather crowded district, almost exclusively inhabited by the laboring classes, who are here, as elsewhere, chiefly foreigners. This district, which forms in and by itself a village comprising 150 houses, and 1900 inhabitants, (an average of 12.66 persons to each house,) is situated on low, marshy, or boggy land, elevated only one or two feet above the level of high tide. The tenements are of the cheapest sort usually built for operatives in small manufacturing villages, in whose construction the health and comfort of the occupants is the last consideration. The cellars, where there are any, although usually above ground, are damp at all seasons, and during the spring months many of them are flooded.

"Very little attention is paid to the disposal of sewage;" the privies are neglected, surface drainage is common, and as for several years water from "Spot Pond" has been in general use, and the supply abundant, the soil in proximity to many of the dwellings has become water-logged, and its upper stratum contaminated by decomposing filth. Add to this, that the wages of the laboring class has diminished, that many persons have been thrown out of employment, and a good deal of consequent hardship and privation endured, and we have in combined operation the four important factors in the production of disease enumerated in the circular, viz: dampness of soil, disposal of sewage, crowded population, and deficient nourishment. And yet, during the year ending December 1, 1876, not a single death from scarlet fever was reported in Malden, although cases of greater or less severity occurred in all parts of the town."

As corroborating what we have just written, the following may be reported: "During the Summer of 1867, a child, living in one of the worst tenements of Edgewood, sickened of malignant scarlet fever, and in less than a week died. Beneath the same roof, huddled together in eight

small rooms, dwelt five or six families, each blessed with a numerous progeny. The town school being then closed for the mid-summer vacation, the children were all at home, and were permitted, in spite of my remonstrances, to run at will in and out of the sick room. One day I discovered a group of a dozen youngsters, of all sizes and both sexes gathered around a puddle of nasty water fed by the sink spouts of the premises. They were too much absorbed in the fascinating amusement of making mud, or rather filth pies, from the kitchen sludge, to be either annoyed by the stench or disturbed by my presence. Now thought I for an epidemic: for which the conditions seemed exceptionally favorable,—a putrid case; abundance of the right material, crowded quarters, constant exposure, filthy surroundings, a foul and tainted atmosphere, in short total neglect of all sanitary requirements. Notwithstanding these circumstances, the disease content for the nonce with a single victim extended no further in this neighborhood."

The period of incubation, or the time which elapsed between the exposure of the individual and the commencement of the disease varies very much. Trouseau saw a case in which twenty-four hours only elapsed between the exposure and the disease. Hanaur, two days; Russeager, a child exposed at noon sickened at night; Zengerle, in two days; Murchison, two cases, each of twenty-four hours; Marson, twenty-six and a half hours; Pons calculates the period of incubation certainly four days. Thorsen from two to four days; Zehnder, two to five.

Much more extensive periods than these have however been noted, some of forty days; three to five weeks, these cases are however extreme, and should be received with suspicion. Moore saw a case of seven days; Bonning of fourteen; Paach of twelve; Dr. W. B. Atkinson, one of at least twenty-eight days incubation, the average period generally observed being about seven days. So that if seven days passes over after the exposion of a child to the infection, it may reasonably be concluded that it will escape.

It is probable that at any period of the disease the poison may be generated, perhaps even before any external manifes-

tation may be detected, but this is very exceptional, for we know by repeated observation that early isolation protects almost invariably even after the rash is out. We are disposed to think that the malignancy of the poison intensifies with the advance of the disease, being but slight when the febrile stage commences and gradually becoming more potent until desquamation is accomplished, during which time probably the virulency of the material thrown off is not only greater but much larger in quantity. The poison does not even then cease to be generated in all cases, for we have evidence that during the sequelæ that of dropsy, for instance, it may be produced, and it is more than probable also that in those cases where a second or third desquamation takes place, the affected particles of the skin may be charged with the virus. It is very difficult to determine the period at which the power of infection ceases; in general terms, leaving out these exceptions, it may be stated that after desquamation has entirely been passed and the patient exhibiting the evidences of returning health, the danger of infection is over, especially if all the clothing has been removed or destroyed, and the patient frequently bathed and the hair cut.

That every one is not liable to contract Scarlatina is generally admitted, as the age advances towards puberty the susceptibility declines until it is only exceptional to find persons of thirty or forty years taking it. The statistics of every epidemic show that it is essentially a disease of childhood, not generally affecting infancy; nursing children almost invariably escape, although we do read of babes taking it, and it has been recorded that even infants have contracted it prior to birth.

Fourtual reports the case of a woman thirty years of age, who had never had Scarlatina, and who during the eight months of her pregnancy nursed her husband and son through the disease; when her child was born it could not swallow and had an uncommon redness of the skin, which he did not hesitate to consider as the characteristic eruption of Scarlatina, the more so as the tongue and mucous membrane of the mouth was of a red color. The difficulty of deglutition lasted

to the fifth day, when the child drank eagerly, and on the ninth day abundant desquamation commenced, later separation of the nails of the toes and the fingers took place; the child recovered. Gregorie had a like case, the child dying. Such cases are very rare.

The susceptibility is the greatest between the ages of five and ten, gradually increasing from the second, rapidly during the third, and decreasing from the tenth to the fifteenth year. In many instances susceptibility seems acquired by some occult change taking place in the system; children who have been exposed to one epidemic, and escaping, have suffered from a subsequent one. And again, the susceptibility of some families would seem to be intense, not only in contracting the disease, but when contracted, to have it in the most intense form. Thus, Harlin saw the parents and nine children attacked in a few days; Müller, a family of eight children, four died in two or three days—five being taken; Loscher, five children of a family died within a fortnight; Copeman, four children of a family of five died so suddenly, that suspicion of poisoning was raised; the fifth child explained the disease, going through a regular scarlatinous attack. Corson saw a family of two grandparents, two parents and eight children; seven of the children died within six days—all had the disease; Fitzpatrick, five children, all died in a short time. Fortunately for us, this extreme susceptibility is very rare. Sex does not seem to have any protecting influence, and, according to Murchison, neither does race. In the West Indies, in India, throughout Asia, in Africa, among the aboriginees of New Zealand, of North and South America, there has, from time to time, prevailed severe epidemics, as malignant as any which has prevailed with the white race. This, however, does not seem to apply to the negroes of the United States, who do not, as we know, suffer as much as the whites. The united observations of those who attended this race upon the plantations of the South, accord as to the rarity of scarlatinous epidemics among them, and to their mildness. It has been asserted, although we do not know upon what authority, that the nearer to the tropics epidemics take place the more malignant they

are. Certainly, some of the epidemics of England and Ireland have presented examples of the greatest malignancy and prevalence that have ever occurred.

Generally, the disease attacks but once, yet even here exceptions occur; even tertiary attacks have been noted, and it would appear that this peculiarity to subsequent attacks pertains to certain families. Robertson has seen four members of a family with second attacks; Troyansky, two; Murchison, two sisters. In some of these, intervals of years had elapsed; in others, the secondary soon followed upon the first. In Keil, Henrici attended a woman who had suffered from it seventeen times (?)

The law which governs scarlatina is extremely obscure, it is in fact almost unknown. We ask in vain, why it is that at times a town or city suffers severely, while others in the immediate vicinity with an intimate intercourse escape? and why after an interval perhaps of years the reverse occurs? Why do sporadic cases so frequently occur, and not extend; and again, from what cause do epidemics arise? Why are some epidemics so malignant, and some again so mild? Why should it die out at all, while thousands of children remain unaffected? Upon these and like points the sanitarian is forced to express entire ignorance. The effect of locality, of elevation or depression of the country; of sub-soil, of drainage, sewerage, of geological structure; of the range of rainfall, supercharge of water; of cleanliness, of climate, of seasons, of habit—have all attracted attention, especially in the more recent years. But, so far, no appreciable variations have been detected from any of these causes; while we believe that defective hygiene, with extreme poverty and the train of depressing agents, usually bring with them a higher death rate, but we cannot assert that this is greater than is attendant upon other diseases, and not more than deficient nursing, care, poor food, clothing, etc., of indigence will reasonably account for.

Has the season any influence over the prevalence of epidemics? In England, from statistical record, the greatest number have taken place in the Fall, from September to No-

vember; the smallest number during the Spring, in March, through April, but this does not hold for other countries. In them we see it prevailing at all seasons, and its severity has no connection with the time of the year. The heats of Africa affect it but little, and the intense severity of Norwegian winter does not prevent it; its spread " is entirely independent of temperature, atmospheric moisture, atmospheric pressure, winds and electricity, etc.

From Dr. T. S. Sozinsheys, of Philadelphia, (article in January 24, 1880, number of the Medical and Surgical Reporter) who has bestowed great pains and labor in working up this matter, we learn that almost all medical writers who see fit to say anything on the subject of Scarlet fever, as does Dr. Bristowe, in his " Practice of Medicine," that " its prevalance seems independent of season and climate." It is worth while to look and see if this statement may not be questioned. The influenec of climate may be disposed of first; considerable light ought to be cast on this subject by the mortuary statistics of the United States, collected for the Census year, June 1st, 1870. From them can be gained at least an approximately correct idea of the extent of its ravages in different sections of the country.

The following table gives the number of deaths from it to 100,000 of the population in each of the States :

Alabama	1.3	Kentucky	6.0
Arkansas	3.3	Louisiana	9.4
California	85.3	Main	68.0
Connecticut	54.0	Maryland	42.4
Delaware	48.3	Massachusetts	62.8
District Columbia	53.0	Michigan	60.0
Florida	5.5	Minnesota	54.1
Georgia	1.0	Mississippi	2.9
Illinois	85.1	Missouri	61.0
Indiana	21.0	Nebraska	83.3
Iowa	27.3	Nevada	352.5
Kansas	98.3	New Hampshire	30.0

New Jersey	85.6	South Carolina.	2.5
New York.	77.7	Tennessee	2.3
North Carolina	1.3	Texas	2.4
Ohio	2.0	Vermont	16.3
Oregon	1.7	Virginia	3.5
Pennsylvania	160.4	West Virginia	35.6
Rhode Island	88.5	Wisconsin	96.7

This table shows that the disease is far more common, or at any rate that a far greater number of deaths from it in proportion to the population occur in the Northern than in the Southern States of the Union."

Dr. Drake, in his work already quoted says that epidemics "have been far more frequent and fatal in the middle and Northern than in the Southern States." From the table it would seem that it is in most of the Southern States a disease of minor importance. The greatest mortality from it is not in the most Northerly, but in the Middle States. It is proper to say here that it may be justly assumed that the relative mortality in different sections of the country is very similar every year to what it was in the Census year."

Relation of season to the disease: "The mortality from the disease in the United States in the census year ending June 1, 1870, is, with the exception of five deaths of unknown dates distributed over the following months:

January	2205	July	1216
February	2393	August	1096
March	2726	September	927
April	2294	October	1000
May	2146	November	1281
June	1326	December	1705

Here it is seen that in the first quarter there were 7324 deaths; in the second 5766; in the third 3239, and in the fourth 3986. According to the season there were in Spring

7166 deaths; in Summer 3638; in Autumn 3208, and in Winter 6303" * * the order "of the seasons; Spring, Winter, Summer, Autumn."

"In an article on epidemic cycles, in the British Medical Journal, September the 1st, 1877, Dr. Ransome shows that this disease pravails to an unusual degree every fifth year. This law is very observable in the record of it in Philadelphia. The number of deaths from it each year, for sixteen years, is as follows:

1864	349	1868	224	1872	174	1876	328
1865	624*	1869	799	1873	319	1877	359
1860	491	1870	959*	1874	461	1878	554
1867	367	1871	262	1875	1032*	1879	336

The probability is very strong then that it will be very prevalent in 1880. The probability of it prevailing in a severe form is so great that the health authorities should put fourth extraordinary efforts to prevent it. No pains should be spared to avert if possible, the impending calamity, to smite powerless this dreadful enemy of the nursery."—Dr. T. S. Sozienskeys. Barker maintains 'that ozone promotes the frequency of scarlatina contrary to what is found in other diseases.' Nor do the diurnal variations of temperature appear to exert any influence upon the mortality, a cold, moist spell not increasing its fatality.

There is no other disease whose mortality is so variable; at times, so very great; at others, so very small. In 1863, in London, the mortality comprised one-fourteenth of the entire death rate. In Warsaw, two thousand five hundred and fifty-nine children died of it in five months. Dr. Emerson, of Philadelphia, is cited by Dr. Caspar Morris as saying: 'It is a remarkable fact, that in twenty-one years, from 1807 to 1827, inclusive, the total mortality was only one hundred and twenty out of fifty-three thousand deaths. Doubtless, some cases were reported in the Bill of Mortality under the vague title of 'sorethroat,' of which amount during the whole period referred to was three hundred and fifty-six; but with such additions the proportional mortality from scarlet

fever would be trifling compared with its ravages in more recent years. Only one death was reported in 1827; not one in 1828; in 1829, there were nine; in 1830, there were forty; since the last year the mortality from this source has very much increased, as will be apparent from the subsequent ten years, viz: in 1831, 200; in 132, 307; in 1833, 61; in 1834, 83; in 1835, 205; in 1836, 240; in 1837, 205; in 1838, 134; in 1839, 225; in 1840, 244.' In the United States it destroys a great number of lives than any other contagious fever; and in the State of New York causes from three to five thousand deaths annually, while it is evidently increasing each year, both in numbers and severity in the United States. 'According to the Census Reports for the year June 1, 1870, the deaths from it were more than from any other disease, except consumption, pneumonia and enteric or typhoid fever. The number from it was 20,320; from consumption, 69,898; from pneumonia, 40,012; from typhoid fever, 22,187. It caused one death to every twenty-four of two-tenths (24.2), or a little over four per cent. of the total mortality,' and since that time the proportion has rather been increasing each year.

"The fearful damage which scarlatina inflicts upon those whom it does not destroy makes this the worst of all infectious maladies, for from forty to sixty per cent. of all who convalesce are believed to suffer consequences of the malady that permanently impair the soundness and the value of life." Referring to this variability of the mortality of scarlatina, Groves, in his Clinical Lectures, says: "In the years 1800 to 1804 scarlet fever committed great ravages in Dublin, the type which it assumed was most violent, sometimes terminating in death as early as the second day. It thinned many families in the upper and middle classes, and left not a few parents childless. From the year 1804 to 1831 scarlatina epidemic occurred, but always in a mild form, so much so that many were led to believe that the fatality of the former epidemics was chiefly, if not altogether, owing to the erroneous methods of cure adopted by the physicians of Dublin."—"The experience derived from the present epidemic completely refuted this reasoning, and has proved that, in spite of our

boasted improvement, we have not been more successful than in 1834–35 than were our predecessors in 1700–24."

In cities of any size, sporadic cases occur constantly, the disease is never absent, and at irregular periods running up to epidemics, the factors necessary for its production are ever present, while this is the case, it is quite curious that pandemics so rarely occur—from the tenacity of the poison, with the activity of travel and commerce, it is singular that large tracts of country are not invaded, there seems to be a tendency to confine inself to a somewhat limited locality and while prevailing there not to spread to neighboring places, but exceptionally.

One of the most prominent symptoms of Scarlatina, is "Sore throat." Sore throats always prevail, also during epidemics, apart from the fever—apparently attacking otherwise healthy children, and adults. By some, the sore throat is regarded as a milder form of the fever; by others, not connected with it at all; be this as it may, wherever the Scarlatina prevails, those cases occur—and it is impossible not to associate the one with the other—but growing out of this association, arises the question, can or do these sore throats affections communicate Scarlatina? Can one, who years before, as a child, passed through the disease, having now the sore throat transmit the fever, when no other feature of disease is manifested? We have no personal knowlege upon which we can form an opinion in answer to this question, although Dr. D. P. Allen in the Boston Medical Journal asserts that these cases of sore throat, without rash, may communicate Scarlatina to others."

The course of Scarlatina is very uncertain—in all cases, even when the disease seems mild and its course normal, dangerous symptons may arise without any attributable cause—modifying the whole condition of the patient, and rapidly causing death.

In an affection of so much gravity as Scarlatina occasionally assumes, the question naturally presents itself, if some measures cannot be instituted by which its introduction can be prevented, or at least its extention limited after its introduc-

tion has taken place. Sanitation has done much to accomplish this, but unfortunately the effects of sanitation are obscure; hidden from observation—the result of all such measures must from the nature of circumstances be negative. For who can affirm that any means, however employed, has ever checked the progress of disease, or who can foretell what the characteristics of an epidemic, such as scarlatina will be; we can only accept what can reasonably be inferred. The chief measures of sanitation are isolation of the sick, and the use of those agents which chemistry presents as disinfectant. The most efficient appear to be Carbolic Acid, Permanganate of Potass. Preparations of Chlorine and Iodine, Zinc, Iron, Sulphur, &c., most of these articles are capable of forming solutions, and can thus be directly applied to infected articles.

By persistent attention much may be done to render the liability of persons contracting the disease very much less. It should ever be borne in mind that everything which escapes from the patient or comes in contact with him is infected; all discharges from the mouth, from the lungs, the glands, the skin, from the bowels, from the bladder. By mouth washes and gargles much can be done to render the discharges not so infectious, but we have to confess that the exhalations from the lungs have so far defied all attempts at modification. The effete matter from the skin can in a great degree be controlled, by inunction, greasing the patient regularly, so that these particles may be incorporated with that substance and rendered less volatile, and from time to time the skin can be purified by a thorough washing. The excreta from the bladder and the bowels can be purified immediately by its reception in vessels containing disinfectants. All superfluous furniture can be removed from the chamber, carpets, curtains, chairs with stuffed seating, cloths of all kinds; the mattress protected by india rubber sheeting, placed below the ordinary sheets, and on the floor in the immediate vicinity of the bed, covered by oil cloth or india-rubber cloths, and immediately washed with disinfected solutions when soiled. All towels, handkerchiefs, etc., can be dispensed with, and soft pieces of

cloth used instead to be immediately destroyed after being used; the sheets removed frequently from the bed and thrown into a tub containing the same disinfecting solution, and all the wearing clothing of the patient treated in the same manner before being allowed to be taken out of the room. Every article touched by the patient, as spoons, knives, glasses, etc. washed also before being removed. Visitors should be excluded, and nurses only sufficient for the attendance on the sick permitted. Clergymen should be strictly prohibited from visiting the sick room of a child, and only admitted to that of adults for a short time, and it should then be enjoined upon them to carefully wash their hands in some disinfecting fluid before leaving the room, and judicious not to pay other visits for several hours; and that they should walk in the open air for an hour or two before going to their homes or before performing the services of either church or the Sunday schools.

The health department of the City of New York, recommended as a good fluid for disinfecting purposes, eight ounces of the Sulphate of Zinc, one ounce of Carbolic Acid and three gallons of water. Articles to be soaked one hour, and then placed in boiling water for washing."

The Ninth Annual Report State Board of Health of Massachusetts, Article by Dr. Johnson, recommends that "During convalesence the patient should keep his room until desquamation is completed; after complete recovery, he should not mingle with the rest of the family or go about the house until he has been thoroughly cleansed, and his person clothed with fresh uninfected garments. The premises he has occupied should then be disinfected in the following manner: The coverings upon the carpets and the furniture, the temporary curtains, and the bed clothing should be carefully folded inwards, as they are removed, so as to retain whatever of contagion may be upon their exposed surface. They should be put in a tub containing some disinfecting fluid, preliminary to boiling and washing. The bedding, furniture and all articles in the room should be re-opened and arranged, "so as to expose the greatest amount of surface

to the action of the disinfectant." All outlets from the room, such as the chimney, floor, windows, etc., should be closed. The fumes of the Sulphurous Acid Gas should be then generated in the room by burning sulphur on live coals. There is no danger in using an excess, for the sulphur will go out in a well closed room, when the oxygen of the room is consumed. The person using this disinfectant, immediately after lighting the sulphur, should withdraw from the room and close the door. It is advisable to keep the room closed from six to eight hours. At the end of this time, the windows should be widely opened, and the air and sun allowed to search and purify the room of its offensive odors or remaining infecta; "all the wood work of the room should be thoroughly scoured with a disinfectant."

In case of death the interment should be early. The clothing instantly disinfected. The body washed with a disinfecting solution, wrapped up in a sheet saturated and wrung out from disinfecting fluid. The coffin made water-tight, its bottom covered with six inches of saw dust, dampened with chloride of zinc. The body then covered with saw dust also dampened, and the coffin immediately closed. "Neighbors and friends should not be admitted to the house to attend the funeral, which should be brief, and conducted so as to give the least possible opportunity for the communication of infection." From time to time articles have been sought, which if taken by the person exposed, will prevent the contraction of the disease. Medicine of this kind are called prophylactics. It is not singular that they should be eagerly sought for here. Of the so-called prophylactics for this disease, the good old Thomas Watson says, and his opinion coincides so much with that of most of the profession that I cannot but introduce his remarks: "You are probably aware that belladonna is believed by many to exert a preventive and protecting influence upon the body against the contagion of Scarlet fever. Hahnemann, the author of the homœpathic hypothesis, and thereby of much mischief to mankind, was the first to assert this. The notion was evidently suggested by that hypothesis, for belladonna when administered in small doses, sometimes

produces a scarlet efflorescence on the skin and certainly tends to cause dryness and redness of the fauces. This is but a poor foundation on which to rest its prophylactic power. To test this alleged power is not very easy. Other precautions are commonly employed at the same time; there are great natural differences in different individuals with respect to the susceptibility of the contagion of scarlet fever; the prepared extracts of belladonna are, not seldom, worthless and inert. The conservative property, however, of that vegetable has in my opinion, been completely disproved by the trial of it, made in the George Watson's Hospital, in 1851, by Mr. Benjamin Bell. Scarlet fever having appeared within that building, belladonna was given to fifty-four healthy boys, at first in doses which caused dilatation of the pupils and impaired vision. The drug therefore was not inert. After this plan had been in operation for a month, after full time allowed therefor for the protecting influence of the belladonna if it really possessed any, twenty-three of the fifty-four boys took the disease.

It is sometimes prescribed by men who have little or no faith in its preventive virtues, in order to give confidence to those employed in nursing the sick and to comfort the anxious parents. But in proportion to the confidence thus produced will be the risk of the neglect of other and better safeguards. For my own part, totally discrediting the defensive powers ascribed to the drug, abominating all shams and believing that so poisonous a substance can scarcely be taken for some time together, even in small doses, without prejudice to the general health, I not only never propose it, but I think myself to state plainly my opinion of it whenever its use is proposed to me."

Niemeyer, a recent author, says: "Prophylaxis requires the isolation of healthy persons from those affected with the disease and from those who have intercourse with such patients. This is the only rule that promises any good results, hence it should be urgently recommended during malignant epidemics. Belladonna (extract Belladonæ gr. iii. add aquæ dist. oz. i., given daily twice, in so many drops as

there are years in the patients age) is regarded as prophylactic by some physicians as well as homœopaths, but experience has shown that even when continued for a week this remedy affords no protection against scarlatina. The same is true of all other medicines, either internal or external, that have been recommended as prophylactics."

Dr. William B. Atkinson, of the Jefferson Medical College (Med. and Surg. Reporter, December 4th, 1880) says: "Prophylactic medicine is yet *sub-judice*. The lecturer has in a number of instances employed Sulphocarbolate of Sodium, and with such apparently good results, that he proposes to continue it until convinced that it is useless."

EPIDEMIC OF SCARLATINA IN CHARLESTON.

The epidemic of Scarlatina which occurred in the City of Charleston in 1881 was remarkable for its violence and the suddenness of its invasion. Many physicians, before learning of its existence in the city, saw it within a short time, frequently upon the same day, in widely different portions of the city. It seems impossible to ascertain from whence it came without assuming that the cause existed in the community, only awaiting favorable circumstances for its outbreak. The first case, as far as can be learned, was seen at No. 33 Meeting street, the connection between this case and any prior to it cannot be traced. It was possible that cases happened before this of not sufficient severity to require the attendance of a physician, and were therefore unnoticed. It was reported through the city that prior to this there had been cases in George street, in Gibbes street, Line street, upon the Neck, etc., but no physician corroborates these vague rumors. It was said that the first case took place in a child just arrived from New York, and in one of our hotels, but this statement turned out incorrect. In the practice of Dr. R. A. Kinloch, in May, 1880, a sporadic case was seen near the Battery, and upon the 15th of December, of the same year, a white child who had been the city on a visit, staying in King street, between Queen and Broad, but who resided upon the island, took the disease there, suffering from the rash, the high fever, angina, and afterwards desquamation took place. This child had however left the city upon the 2d of December. It was attended by Dr. George Pelzer.

In response to the circulars addressed to the medical gentlemen, we learn that the dates of the first case seen by each of them was as follows:

Dr. Wm. C. Ravenel, 18th January; Dr. J. S. Mitchell, 21st January; Dr. J. L. Dawson, 12th February; Dr. H. W. DeSaussure, 17th February; Dr. J. L. Ancrum, 18th February;

Dr. H. M. Cleckley, 18th February; Dr. S. L. Lockwood, 19th February; Dr. T. G. Simons, 19th February; Dr. J. Ford Prioleau, 20th February; Dr. W. H. Huger, 20th February; Dr. H. W. DeSaussure, 21st February; Dr. J. S. Buist, 25th February; Dr. T. L. Ogier, 28th February; Dr. A. P. Pelzer, 28th February; Dr. R. C. Brodie, 6th March; Dr. R. A. Kinloch, 8th Marth; Dr. W. T. Wragg, 14th March; Dr. E. H. Kellers, — March; Dr. M. Michel, 24th March; Dr. John Forrest, 28th March; Dr. A. M. Lynah, 3d April; Dr. F. L. Parker, 11th April; Dr. C. B. Lanneau, 22d April; Dr. Thomas Legare, 25th April; Dr. F. Peyre Porcher, — May.

The last white, previous to the epidemic, *died* in 1878; during this year there was also a *death*, from scarlatina, of a colored person. In 1879 and 1880, there had been no deaths. During the epidemic, up to 9th of September, 117 deaths occurred, 82 of which were whites, 35 colored. It is very much more than probable that other deaths, produced by scarlatina, occurred than those which appeared as such in the Reports of the City Registrar. This occurred in consequence of the attending physician not being called upon to attend the primary disease—seeing only one of the sequelæ, and that such instances, no doubt, occurred most frequently among the colored.

By the middle of March the epidemic was fairly upon the people. So sudden was its onset, and so violent its attack, especially upon some families, that the community became alarmed, and soon most exaggerated statements were spread regarding it. As in all epidemics of this disease, its fierceness was mainly upon the young. Early in its course several families lost three and four children; some families were rendered childless. It was noted how often an only child was taken. It was seen that violent cases terminated fatally, some within twenty-four hours; and what increased the alarm and terror of the people and added misery to the bereavement, was the manner in which the death took place. Invariably, in these instances of early death, the little patient

suffered from head symptoms, and fell into one or more convulsive seizures, horrible for the friends to see, which always presented the appearance, but fortunately not the reality, of great agony. These cases produced an impression upon those who saw them, which could never be effaced. And still further was the sorrow increased by the condition in which the intelligence of the child was affected—so depressed and perverted as to have removed it during its last moments beyond any appreciation of the love, the tenderness, and the sympathy of its family. A few cases of that most insidious form in which children, apparently going well through the regular course of the disease, were suddenly removed by the supervention of convulsions, and a few who died from the most terrible form of putrid sorethroat, in the most offensive condition, continued this alarm. It thus soon became rumored in the city that the disease had assumed new and more malignant features, foreign to scarlatina. It was stated that it had commenced to attack adults as freely as children, and the dread of it became much increased. Children were taken from the schools ; families were removed into the country, or to the neighboring summer resorts ; many of those who remained secluded their children within their premises, and a strict supervision was kept over all outside intercourse. Infected houses were shunned; even near relatives declined to visit or hold any communication, even indirectly, with the members of the families of the sick, and so great was the fear that a few storekeepers refused to let the families or their servants trade with them, or even to enter their stores. The families were dependent greatly upon the nursing done within themselves, even some of the servants refusing to remain on the premises, and the stricken families felt that a band had been drawn against them. The Board of Health issued circulars of a sanitary nature to their citizens, and physicians were requested to report all cases they were called upon to attend to the City Registrar immediately as the disease was recognized. The relatives of the deceased were asked to have the services of the Church performed at home, and the Board of Health prevented funeral services of those who had died of

this disease from being conducted in the churches or the public edifices. The services were performed with as few persons as possible present—frequently only those of the immediate family. Upon the death or upon the recovery of a patient, the yard and the house were disinfected, and the room which the patient had occupied was thoroughly fumigated by an officer appointed by the Municipal Board. The public prints contained articles of advice, etc., upon the disease, recommending prophylactics, etc. Some of the druggists, availing themselves of this opportunity to sell their goods, and hoping to benefit the people, inserted advertisements of prophylactics in the papers, and the subject of the epidemic became the common subject of conversation.

Upon looking back we cannot but be struck with the exaggeration of the statements, and feeling shown, during the prevalence of this epidemic. The numbers sick, in proportion to the population, has not been near as great as in some other epidemics which have prevailed elsewhere, and its malignancy by no means so extreme. It is true that it is undoubtedly the most severe that has ever visited this city. As far as we can ascertain, mostly by conjecture, the mortality did not exceed ten per cent., if as much as this; the majority of cases were very mild, so much so that many did not require attendance by the physician, and we know of several cases in which the parents were not cognizant of the nature of the slight affections of which their children suffered, and only recognized it after, by the sequence of desquamation or dropsical symptoms, etc. Comparatively few adults contracted the disease—most of whom, however, had it severely. Compared with the disease in its most malignant form elsewhere, we find that Voit lost 16 per cent. in his practice; Memminger, 17; Glaser, 19; Gauster, 20; Feitel, 23.3; Bohmen, 21.8; Stutgarg, 23.8; Hoff, 28; Hambursin, 30; Arrigoni, 40; J. Salyman, 36 per cent. In 1862, the city of Stuttgart had a mortality of 23.8 per cent. In Massachusetts, in 1857, the percentage was 9.36. In the London Fever Hospital, for twelve years, the mortality varied annually from 2.5 per cent. to 16.5 per cent. In the Hospital for sick children, from 9 to 31 per

cent. In the private practice of some physicians in Massachusetts, 25.30, and even 50 per cent. has happened, for a long period of years; the average mortality would seem to be about 6 per cent. in that State.

In examining into the history of Scarlatina as it occurred in the city of Charleston, we find but little data. We have every reason, however, to believe that it was introduced at a very early period. Ramsay, in his History of South Carolina, vol. II, p. 88, published 1809, notes the fact that the "Diseases of the throat are common in South Carolina." Its variable weather often produces imflammatory affections of that organ; disease thereof accompanied with the Scarlet Fever or the Scarlatina Anginosa, frequently occurs, but rarely mortal. An apparently slight affection of the throat, accompanied with a laborious respiration, resembling the Croup, about the year 1785, proved very destructive to many children, and in a few instances, to three or four in one family. It has seldom occurred since that period."

Mills, in his Statistics, published 1826, also says: "South Carolina is occasionally subject to those epidemic diseases common to other parts of the United States, such as Scarlet Fever, Hooping Cough, and Influenza," so that although we are now unable to trace back the disease with us to the first cases, or the first epidemic, we feel assured that it was introduced very soon after the settlement of this city. We have only gathered the statistics of it from the year 1821, a period extensive enough, however, for reference, and long enough to ascertain that it is by no means an uncommon disease among us.

STATISTICS.

From the Census of the City of Charleston, 1848, prepared under the authority of the City Council, by J. L. Dawson, M. D., and H. W. DeSaussure, M. D., we get the following Statistics:

Years	WHITES.		COLORED.		Totals.	TOTAL POPULATION.
	Scarlet Fever.	Sore Throat	Scarlet Fever.	Sore Throat.		
1822	0	43	0	3	46	Population of City 1820,
1823	0	11	0	4	15	U. S. Census, 24,780.
1824	0	0	0	7	7	
1825	0	1	0	2	3	
1826	0	1	0	4	5	
1827	0	7	0	0	7	
1828	0	3	0	2	5	
1829	0	4	0	3	7	
1830	13	4	5	5	27	Population 1830, 30,289.
1831	3	3	2	3	11	
1832	10	0	10	3	23	
1833	0	1	3	1	5	
1834	0	0	0	1	1	
1835	0	4	0	3	7	
1836	0	0	0	1	1	
1837	5	4	0	0	9	
1838	24	6	10	16	56	
1839	13	20	3	15	51	
1840	3	3	0	3	9	Population 1840, 29,261.
1841	0	5	0	1	6	
1842	8	5	0	2	15	
1843	3	5	15	7	30	
1844	34	0	20	0	54	
1845	9	3	3	1	10	
1846	9	7	2	2	20	
1847	0	11	0	0	11	
1848	0	4	0	1	5	
1849	3	0	3	0	6	From Annual Report City
1850	33	5	11	1	50	Registrar, population 1850,
1851	16	4	7	1	28	32,985
1852	0	1	0	2	3	
1853	7	6	4	4	21	
1854	3	0	2	0	5	
1855	2	0	0	0	2	
1856	3	0	0	0	3	
1857	3	0	1	1	5	
1858	21	0	2	0	23	
1859	11	1	2	2	16	
1860	9	3	0	4	16	Population 1860, 40.519.
1861-5	Records	Lost Dur-	ing War.			

STATISTICAL REPORT CONTINUED.

Years.	WHITES.		COLORED.		Totals.	TOTAL POPULATION.
	Scarlet Fever.	Sore Throat.	Scarlet Fever.	Sore Throat.		
1865	2	0	0	0	2	
1866	0	0	3	0	3	
1867	0	1	0	0	1	
1868	1	0	0	0	1	
1869	1	0	0	0	1	Population 1870, 48,956.
1870	1	0	0	0	1	
1871	0	0	0	0	0	
1872	0	0	0	0	0	
1873	0	0	0	0	0	
1874	1	0	0	2	3	
1875	10	0	7	0	17	
1876	5	0	0	0	5	
1877	0	0	0	0	0	
1878	1	0	0	0	1	
1879	0	0	0	0	0	
1880	0	0	0	0	0	Population 1880, 49,999.
	267	176	115	107	665	

Whites.....443
Colored.....222

Total.....665

We would state that we have calculated the mortality of "Sore Throat and Scarlet Fever, under the same head, for we find that in the census of Drs. Dawson and DeSaussure, they seem somewhat united, for in the table of Abstract of Deaths for the years noted, the words Sore Throat is omitted, and the numbers under the head Scarlet Fever, corresponds with the united numbers Sore Throat and Scarlet Fever in the earlier pages; this condition existing in the record between 1822 and 1848. We have carried out to the end of the last year, 1880, as the only manner to avoid still greater confusion—giving the number of undoubted cases of Scarlatina separately, however, but thinking that in the earlier years, cases of Scarlatina "were often reported as that of Sore Throats." In the same table, there is a separate head for Quinsy, and another for Membranous Sore Throat.

We feel more authorized to unite these diseases, as upon page 204 of the "Census," we find this explanation: "Scarlet Fever is not spoken of in the earlier records of the city, as one of the prevailing diseases, and it is generally believed to be of comparatively recent introduction; but it is more than probable that many deaths, formerly registered under the head of Putrid and Malignant Sore Throat, were, in reality, cases of Scarlatina; of this, however, there is little certainty."

In corroboration, we know that in 1749, London experienced a severe Scarlatina epidemic, which was so well described by Dr. Fothergill, that in compliment to him (?) it was called "*Fothergill's Sore Throat*," and the first epidemic of which we have any description, probably the first that occurred in the Colonies, in 1735, was known as the "*Throat Distemper*." So that there is at least some probability of the physicians in the early portion of this century, speaking of Sore Throat as Scarlatina.

Returning to the epidemic of 1881 we can trace its progress in numbers, and in time, from the weekly tables of mortality so accurately kept by the City Registrar:

FOR THE WEEK ENDING	WHITE		COLORED		TOTAL EACH WEEK
	Children	Adults	Children	Adults	
5th March, 1881.....	1	0	0	0	
12th March, 1881.....	2	0	0	0	
19th March, 1881.....	2	0	0	0	
26th March, 1881.....	8	1	0	0	—14
2d April, 1881.....	6	0	3	0	
9th April, 1881.....	5	0	5	0	
16th April, 1881.....	6	0	1	0	
23rd April, 1881.....	11	1	2	0	
30th April, 1881.....	9	0	2	0	—51
7th May, 1881.....	5	1	2	0	
14th May, 1881.....	3	0	3	0	
21st May, 1881.....	3	1	1	1	
28th May, 1881.....	0	4	5	0	—29
4th June, 1881.....	1	0	3	0	
11th June, 1881.....	0	0	1	0	
18th June, 1881.....	3	0	0	0	
25th June, 1881.....	2	0	0	1	—11
2nd July, 1881.....	1	0	0	1	
9th July, 1881.....	1	0	0	0	
16th July, 1881.....	3	0	2	0	
23rd July, 1881.....	1	0	0	0	
30th July, 1881.....	0	0	0	0	—9
6th August, 1881.....	1	0	0	1	
13th August, 1881.....	0	0	0	0	
20th August, 1881.....	0	0	0	0	
27th August, 1881.....	0	0	1	0	—3
Total.....		82		35	—117

From these statistics we arrange the years according to the greatest number of deaths in decades approximately.

1838	56	1851	28
1844	54	1830	27
1839	51	1832	23
1850	50	1858	23
1842	46	1853	21
1843	30	1846	20
1881 to September 17th			117

In the decade to 1830, two years being deficient	95
The next ten years to 1840	191
The ten years to 1850	172
The next ten years to 1860	156
The next six (no record of 1861, 62, 63, 64,) to 1870	24
The next ten years to 1880	27
Total	665

From 1875 to 1881, there were but 6 deaths—five of which occurred in 1876, the other in 1878. The longest interval during which no death occurred in was from 1871 to 1874—from 1865 to 1874, there were but 9 deaths.

It has been asserted especially by German authors, that there exists a periodicity in the occurrence of severe epidemics of four or five years. We cannot detect this in these tables.

Running over the Report, of cases of the Medical Society of S. C., from the minute book, for the purpose of ascertaining the season of the year in which epidemics and sporadic cases mostly took place in this city, we find that many more than twice the number of cases were reported during the Spring months, the next most frequent in the Winter, then the Fall, and the smallest number in the Summer.

Dr. Burkley in annoting Gregori's celebrated work upon the Eruption Fever, says: "That from 1822 to 1848 inclu-

sive, 289 whites and 163 blacks died from scarlatina." Citing the census of Drs. Dawson and DeSaussure, and we find from 1865 to 1879 inclusive, 25 whites and but 11 blacks. Burkley has this note also in the work already referred to, "scarlet fever would seem to be about six times less fatal among the blacks in New York than among the whites; the number of deaths in proportion to the population of the two races, during the eight years from 1837 to 1844 inclusive being one to 76 of the whites, and one to 45 of the blacks. In the year 1839 there were only three deaths by this disease among the blacks, to five hundred and seventy-six among the whites, and Stevenson, of Philadelphia, declares that the negroes are less susceptible than the whites."

From these tables we see that the colored race among us, also do not suffer so severely as the whites. From 1822 to September 17th, 1881, inclusive, the white deaths from this disease were 526, the colored but 257; the total 782; proportion white 67 2-10, colored 32 8-10 per centum of the total. But 8 whites and 5 adults died from scarlatina during the epidemic.

The question has been frequently asked how many individuals had scarlatina during the epidemic? Any answer to this must be mere *guess work*. We are disposed to think, that the mortality among those seen by physicians was about fifteen per cent., assuming this it would make about 780 serious and malignant cases, all the deaths occurring here. Assuming also that the very mild, so slightly sick as not to require medical advice, was one-half of this number, an assumption very much within bounds, and we have 390, this number plus 780 would give 1170 the per centage. Some physicians thought that the number of the mild cases was greater, equalling those attended, if so, the proportion would be less about 7 per cent. This number of cases in addition to the usual number of the ordinary diseases which occur at this season, crowded in, as most of them were, within the four months of March, April, May and June, impressed the community with the idea that the number far exceeded what it did, and that the disease was more extensive than here estimated.

With the epidemic was observed the usual accompaniment of sore throats in persons of all ages; in some, adults who had in former years passed through the disease, some who had not, in children who did not contract the scarlatina, and singularly enough in some who having thoroughly recovered from the sore throat, took the scarlatina.

In one family, for instance, of several members, four chilpren had the disease successively, but in so short a time that they sickened and convalesced very nearly together: During this period while the house was thus filled with the sick, a lad had the sore throat so severely as to prevent him from leaving the house for eight or ten days. Recovering entirely from this sore throat he returned to his duties, that of a clerk, and a fortnight after went through a regular course of scarlatina, by no means of a light grade. Both the parents suffered from sore throats, as did also a young lady who had had previously, years before, scarlatina.

During the prevalence of the epidemic, several cases of diptheria occurred, some of which were very severe. Measles and Rotheln sporadically occurred, and an unusual number of traumatic and idiopathic cases of erysipelas were reported to the Medical Society of the State of South Carolina.

From the well known susceptibility of lying-in women to scarlatina and its influence in producing the various forms of puerperal fever and inducing a larger mortality of those confined, we had expected to find that the mortality among such women would have been much increased, but we can discover but one case of puerperal fever which proved fatal, and can learn of but three other cases of puerperal fever. Neither can we learn, nor did we observe that the parturient suffered more than they usually do, or that their convalescence from their confinements were unduly prolonged. Nor was this exemption due to non-exposure; we saw mothers nursing their children sick with scarlatina prior to their confinement and even while their sick children were in the same or an adjoining room. The children were born healthy, and as far as we could ascertain no nursing child took the disease, certainly none during the month.

In attentively studying the characteristics of the epidemic and comparing it with others, we are forced to the conclusion that it did not differ widely, if at all, from epidemics of a like nature, either occurring here or elsewhere. The cerebral symptoms were perhaps much more frequent with a greater tendency to convulsions than usually met. In comparison with many it was quite mild. In comparison with others severe. "Thomas, from a comprehensive review of numerous epidemics, arrives at the conclusion that epidemics of scarlet fever where the mortality is below 10 per cent. may be regarded as benign, comparatively speaking; in not a few epidemics it has been as high as 25 per cent. and may reach between 30 and 40 per cent."

It was observed that a previous attack of Rotheln afforded no protecting influence to an attack of Scarlatina.

The case most frequently seen by the physician were rather severe in character, the milder were not seen at all by him. In these instances the disease frequently began with nausea and vomiting, the fever rapidly coming on, with a temperature ranging from 102° to 104°, and persisting about that, with slight morning depressions and evening elevation, until about the fifth or the sixth day. The eruption appeared often after the fever began, sometimes on the first day and often on the second. The rash, the vivid one of scarlatina, in a hasty observation resembling the erythema of a moderately severe scald, carefully observed, it consisted of small closely connected bright points, equally diffused over the whole surface, pressure causing its disappearance, with the instantaneous return of the color upon the removal; the tongue coated with a white fur, though generally smooth to the touch, occasionally somewhat roughened, the enlarged papillæ projected.

The posterior portion of the mouth, the fauces, the pharynx were intensely red, the inflamation seldom extending along the mucous membrane to the Eustachian tube in the inner ear, occasionally though rarely going on into ulceration (scarlatina anginosa.) The patient had headache, perhaps slight dilerium, with muscular pains in the back and the neck. The fingers and hands were often swollen and felt to

the patient still and uncomfortable. The rash, scarlet in color, somewhat raised, began on the neck and in the axilla, sometimes on the face, gradually invaded the chest, the back, the body, the limbs. The skin was generally dry, but occasionally moist, the appetite slight or deficient, the patient suffering from thirst, restlessness was great, in some of the milder cases a great inclination to sleep, in others insomnia. About the fifth or sixth day the rash began to fade gradually, first leaving the face and then the body; the temperature in the milder cases diminished to the normal, in others persisted longer, the throat symptom subsided and rapid convalescence took place.

Occasionally days or weeks passed, the patient continuing apparently well, when one or other of the sequelæ set in, and these secondary symptoms would run on for an indefinite period. About the tenth day or later desquamation began, flakes of greater or less size of the skin coming off from the hands and from the feet, more minute portions from the body, and surface generally, the period of desquamation extended over an irregular interval, and occasionally taking place twice or even a third time after all other symptoms had gone. It is difficult to determine how long this peeling process continued, in some instances certainly for four weeks.

Albumen did not appear in the urine, though in a few cases it was detected; in some few hematuria took place. Generally, the function of the kidneys was imperfectly performed, and in most of the violent cases there was complete suppression. In some few instances there was diarrhœa, but most generally, as in all fevers, constipation. To the severer cases the term malignant was applied by physicians, with or without reference to the throat symptoms. The worst, and those which furnished by far the largest number of deaths, were those in which the nervous system seemed the most implicated. The fever came on generally with vomiting—soon attained a high range, accompanied with active delirium, agitation, sleeplessness, &c.; the throat but little affected at first; cerebral congestion followed the delirium within a few hours, and then one or more violent epileptiform convulsions closed the

scene—the attack running its course within forty-eight hours.

In others convulsions ushered in the disease, then cerebral congestion took place, with restlessness, dull pain in the frontal region, and delirium, which, rapidly exhausting itself passed to coma, and within a few hours to death. Sometimes the progress of this form of scarlatina was not so rapid; active delirium continued for a day or two, the patient becoming more dull, heavy and stupid, with throat symptoms increasing intensely; the pulse small and frequent, the skin red with the rash, sometimes dry, but more often moist with perspiration, the tongue with the thick white fur, at first with red tip and edges, becoming, with the process of the disease, dry, hard, brown, fissured, and contracted; the capillary circulation sluggish, low muttering delirium (typhoid symptoms) then came on, with perhaps a constant tendency to vomit; the bowels became loose, the skin dry and hot, or rather pungent to the feel; complete stupor supervened, the eyes sunken and dry, the features pinched, and the unfortunate little patient sank either with a livid surface covered with cold sweats, or with convulsions.

Another variety was also occasionally seen. In these few cases vitality seemed at once impaired, the child more or less immediately overwhelmed with the poison. Like all other forms, nausea and vomiting ushered in the majority of these cases; the temperature soon attained 104° to 105½ degrees, the disease marched with great rapidity, so that one could scarcely credit the statement that the little patient had been sick for so short a period as was affirmed; the eruption might or might not have appeared; the whole appearance of the patient, the decubitus, the sunken eye, etc., the feeble, frequent pulse marked the great nervous prostration under which the child was laboring. The respiration became much quickened, the stomach so irritable that neither food, drink or medicine could be retained. Soon the muscles of the arms and legs would twitch frequently and violently, low muttering delirium, stupor, utter imbecility would creep on, respiration almost panting, cool sweats over the body and face, and sud-

den death from convulsions or a more lingering one from exhaustion and collapse.

Painful as it is we must recall another variety more terrible if possible, at least more distressing to the friends and attendants, but fortunately much more rarely occurring. This form (scarlatina maligna) centred itself upon the throat, the fauces, the pharynx, etc., resembling, in many particulars, the worst features of that most fearful affection, "putrid sorethroat." In its incipiency this variety did not differ from those of a milder type, except, perhaps, that the eruption was more purplish in color or darker than usual. At the earlier periods there was nothing to indicate that the most malignant type would be assumed, but with the advance towards the tenth or the twelfth day, or even later, the inflamed mucous membrane of the throat would become more darkened from congestion; the fauces, the tonsils, the buccal membrane, even the mucous membrane of the nose gradually would take on the most intense form of inflammatory action; a thin bloody fluid then escaping from the nose and mouth; the membrane becoming darkened, almost livid, ulceration, with decomposition of tissue, followed, perhaps in patches, perhaps more extensively, the breath, the excretions, the saliva, becoming almost insupportably offensive, and with this there always existed the difficulty of opening the mouth, so that these parts could only be imperfectly seen, and gargles and mouth washes imperfectly used, and the patient was in a condition distressing to himself—almost repulsive to his relations and attendants. As the disease progressed, the house became almost uninhabitable from the escape of the foul secretions.

If unchecked by treatment, diarrhœa, gastric irritation continued, the circulation became more sluggish, the color of the rash returning but slowly after removal of pressure, the pulse becoming small and frequent, the strength diminishing, no nourishment could be taken, or when taken not assimilated, then delirium, coma, cold skin, profuse cold sweating, and death closed one of the tragedies of the sick room.

I have been careful to trace these malignant cases to their termination, so that the entire picture of the disease

could be seen, painful as it is. Several of the cases marched on unarrested by any treatment, apparently even uninfluenced by any means at the command of medicine. These instances were few. In the large majority of cases the beneficial effect of treatment was well marked, and the profession may truly congratulate itself and the community that the mortality did not assume a higher average.

Several of the medical gentlemen who have so kindly furnished me the data from which this paper has, in part, been written, state that in some instances scarlatinous cases were complicated with diphtheria. The distinction between the two diseases is of course somewhat difficult. The distinction, I take it, consists in the high temperature of scarlatina, contra-distinguished from the moderate temperature of diphtheria, the localization of the scarlatina and inflammation upon the fauces, pharynx, tonsils, and mouth, with its absence from the larynx and from the respiratory tract. Trousseau says: "Scarlatina does not like the larynx," and although he is held to task for this by the great Graves, still the expression may be taken as an indication of how seldom the respiratory tract is affected by scarlatina. And, lastly, although perhaps of the most diagnostic importance, the presence or the absence of the thick, leathery, tenacious, false membrane, from which the diphtheritic affection derives its name. Personally, I did not see this complication, as I did not see some of the other malignant cases, which I have been called upon to describe; yet I have no hesitation in affirming its presence in some cases, upon the good authority of others. As I learn, the diphtheritic deposits in the greater number of the few cases in which it took place did not present itself until towards the end of the scarlet attack, but in one or two instances, I have been told, the membrane, with cough, change of voice, etc., (larynxical symptoms,) was observed early, and went through with the case. I see no good reason why this complication should not have been met with. We have now every reason to believe that two poisons of this character may effect the person at one and the same time, as typhoid and malaria, varicella and variola, vaccinia and measles,

and we know that diphtheria prevailed sporadically during the period of the epidemic.

Some of the gentlemen also affirm that in a few cases the scarlet fever was complicated with Rotheln, and singularly as it may appear that in at least three cases, and before desquamation had been completed, the rash and the symptoms of Rotheln was diagnosed. We have already noticed the presence of skin diseases of various kinds, boils, carbuncles, etc., as prevailing.

Before drawing to a close the description of the severer cases of scarlet fever, we wish to note another phase seen also in a few instances; one which illustrates the great uncertainty of the prognosis of scarlet fever. In most of the medical theses upon this disease, the physician is warned never to predict, unconditionally, that the disease will have a favorable termination, but to realize its insidious nature, and that unexpected contingencies may occur, which may mar recovery.

In the instances alluded to, the disease assumed the mild form, unmarked by grave troubles, either in the throat or elsewhere; the nervous symptoms did not predominate, the fever was not unusually high, only about 103 degrees, the rash appearing early and well out, and the patient in good condition for one suffering from such a severe disease; but after the febrile stage had passed, the patients did not convalesce, the debility and the prostration incident to the disease increased, a want of appetite was experienced, and in a few days, with no precursory symptoms, convulsions would suddenly come on, and death ensue unexpectedly.

If there were any characteristics of this epidemic it certainly consisted in the grave complications of the cerebro-spinal system. But few deaths took place without this complication.

SEQUELÆ.

It is not necessary to dwell upon the secondary affections which, so usually follow cases of scarlet fever. As far as we can learn these were such as generally take place in other epidemics, as dropsies, diarrhœas, abscesses, eye and ear affec-

tions, rheumatisms, paralyses, particularly of the inferior extremities, enlargement of the cervical glands, etc., etc.

It is somewhat remarkable that this epidemic did not spread in the neighboring country or in the towns and villages. We know of families exposed to the contagion leaving the city and removing to Moultrieville, Mount Pleasant, Summerville, etc, who did not carry the disease with them. We know of one case, at least, a child carrying it to Columbia, who sickened there, and was then brought down by rail, to die in a few hours; three or four from the city were attacked upon the Island, and several at Mount Pleasant, and yet no epidemic occurred at these points. Constant and daily intercourse and travel took place between the city and these places, and the numerous stations upon the South Carolina Railroad, the Savannah, and the North Eastern, but no epidemic was spread from the city. Most of the cities upon the Atlantic, most upon the Gulf, several in the interior of the neighboring States were affected, yet most of this State escaped, except from sporadic cases.

The epidemic was the most severe that had ever visited the the city of Charleston. Of its introduction, we know nothing, but are disposed to think that the contagia is never absent from the city, clinging, perhaps, to some material—and from time to time affecting individuals, either sporadically or as epidemics, and occurring with such frequency, that the reproduction of the poison never ceased entirely. The earlier cases were observed to spring up in different localities, widely distant from each other, as, for instance, near the Battery, and in King street near Line, where no communication could be traced, or was likely to have occurred. Why the epidemic took place, cannot be ascertained. At no time during the history of the city, had the streets been kept so clean, or so well disinfected; drains, sewers and yards so well looked after, and at no other time had sanitary measures been so freely and so intelligently employed. There had been no marked difference in the meteorological condition of this or the previous year. No storms, no alterations of moment in the surface of the city; none in the water supply, or in the

usual habits of the community. Why then was the epidemic? How are we to account for its occurrence this year and not in others? and why, if as far as we can understand the condition, did it not occur before? Not finding the cause which provoked its origin and spread, how are we to guard against its recurrence?

The community early sought protection by resorting to the use of prophylactics—some few physicians advised it. The larger number believing that no benefit would accrue, advised that only free ventilation and great precautions, such as isolation of children and avoidance of the sick by adult members of families should be resorted to; some passively submitted to the use of such drugs in the families of their patients—others discouraged the use, as calculated to inspire a misplaced confidence, and to lead to the neglect of the necessary sanitary precautions. One or two physicians recommended the use of belladonna; some that of the sulpho-carbolate of soda, and some again of the sulphite of soda; as suggested by Prof. Polli, of Milan, some again combined the belladonna and the sulphite. But the sulphite of soda soon became the favorite, and the community, impressed with the idea that they had found in it the much desired prophylactic property, used it freely. A communication appeared in the only city paper, strongly recommending this article, and a prescription of which was given. This prescription composed of too minute a proportion of the sulphite, was soon discovered to be erroneous; then was substituted the following receipe: Sulphite Soda, ozi; Aquæ, Oii; M. Sig. Give a tablespoonful three times daily. So great was the demand, and so freely was it used, that the druggists were overrun with customers, and the medicine was compounded and kept in quarts, upon the shelves and counters for immediate sale. At one time it was said that all the children in the city were taking it. By far the largest number of physicians expected no benefit from its use, and did not recommend it. Several consented to its employment; a few placed confidence in it, and prescribed it to healthy children. A number of physicians saw numerous cases where children contracted

the disease, who had been for days before, and were still taking the sulphite when the Scarlatina appeared in them, and the same can be said of belladonna. Some physicians thought, that these medicines rendered the attacks milder—these were a few only.

Of disinfection, by the burning of sulphur in the apartment, the same may be said; the opinion upon its efficacy was very various; the greater number saw no advantage, some a decided benefit, a few only were doubtful; all united in the recommendation of ventilation, and of isolation, as early as possible, of the sick. Personally, I am disposed to think that the sulphurous acid did not destroy the contagion, and that the heat occasioned by its combustion, acted disadvantageously, by causing a rarifaction of the air within the apartment, and this air escaping through the orifices of the chamber, carried with it the poison, to be more extensively diffused before the decomposition was accomplished. From what I observed, I think the power of sulphurous acid to destroy this contagia, has not as yet been proven, and that we require more direct experiment in this direction.

It is somewhat remarkable that in such a wide-spread epidemic in this city, that the children in the Orphan House should have escaped. The Orphan House is situated about the centre of the city, enclosed within a high brick wall, occupying nearly an entire block or square; on the north bounded by Vanderhorst street; on the east by the houses with their lots on King street; on the south—upon which it fronts, by Calhoun street; and on the west by St. Philip street. The large, high, and commodious building is in the centre of the premises, extending nearly across from King street to St. Philip street, with its offices upon the back attached; the only building immediately upon the street is the chapel, which fronts upon Vanderhorst street. The playground, which is at the south of the building, is ample and well shaded with trees; at the back is the vegetable garden. This Institution had in it about 300 persons, 224 of which are children. The ages of these children vary from two years to fifteen. Yet, most singularly, no one contracted the fever

There were no prophylactics used; the building was kept thoroughly ventilated and scrupulously clean, and every sanitary measure employed. At the commencement of the epidemic the building and premises were placed under strict supervision. All intercourse, except that most absolutely necessary, was interdicted. The children were not permitted to leave the premises under any circumstances, and the friends, parents and others not allowed to see or visit them. No child was received into the Institution, and as far as the children were concerned, isolation was complete. The only periods at which they were thrown with the people were during the services each Sunday afternoon.

The fact that no one took the fever evinces the efficacy of isolation and precautions. It is also an evidence that the poison of scarlatina cannot be very volatile—that its range of infection is extremely limited; that it cannot extend beyond a few yards at most; each of these 224 children slept within a hundred yards of a case on the other side of the street, at the corner St. Philip and Calhoun, and it is reasonable to suppose that they frequently, in their play, came to the wall, the boundary of the premises, the width of the street only intervening, while through these well frequented streets passed numbers daily, who, no doubt, were just from the chambers of the sick. The danger to which they were exposed came from two sources—the one, the charged atmosphere of the city, and the other, the persons and the clothing of the passers by. We cannot suppose that the atmosphere possessed in itself a disinfective or purifying power. So that we conclude what is more probable, that the poison from its great specific gravity was deposited soon after being taken up. We would here remark, that had the children and their attendants been subjected to the administration of prophylactics, the entire exemption would have been falsely, though reasonably, attributed to their use. A like instance of this occurred in Edinburg; Wood reports that, "in an epidemic there, out of one hundred and seventy-nine boys in a strictly private institute, forty-four took scarlatina; in another institution containing one hundred girls,

not a single case occurred, though outside communication was not prohibited."

The City Hospital, with an accommodation of two hundred beds, received the number of cases of varied medical and surgical diseases, accidents and puerpural women, averaging one hundred patients daily. But a single case of scarlatina was admitted within its walls—the only one which applied for assistance. This, a child, had been carried from this city to Columbia in an apparently healthy condition (period of incubation); after three or four days it sickened, and during the fever, with the eruption upon it, had been brought back by rail, and after several hours of delay was received into the Hospital, moribund. It was kept upon the lower floor during the few hours it lived, and the body for a few hours after, and was removed as soon as possible for interment. The room was fumigated, the bed clothing destroyed, the walls lime-washed. No one in this Institution took the disease; but few saw the child; isolation was as perfect as possible, yet most of the patients, who were adults, were within a few yards of it.

About the end of April the cases, although still numerous, became milder in character, sore throats gradually disappeared, and the number of cases soon began to diminish, decreasing as the month of May passed on; a few lingering cases however still continued, and even at this time, November 6th, a few cases are in the city, one of which we saw this day.

Connected with the epidemic, and as a portion of its history was the action of the Municipal Board of Health, who with the City Registrar, energetically exerted themselves to stay the spread of the disease by the use of every precaution, and the employment of all sanitary measures. They published and distributed circulars throughout the city, and offered advice to the citizens generally. The following papers eminated from that Board:

OFFICE BOARD OF HEALTH,
CHARLESTON, ——— 1881.

At a meeting of the Board of Health held February 2d, 1881, the following resolutions were adopted:

Resolved, That to assist the Board of Health in their efforts to prevent the spread of contagious diseases, the City Registrar address a circular letter to all practicing physicians in the City, asking their co-operation with them in their efforts to prevent the same, by promptly notifying the Health Officer of such diseases, and combining with them in the use of such means as will contribute to that end.

Resolved, That, in the opinion of this Board, in order to prevent the spread of contagious diseases, it is not proper that where deaths have occurred from Diphtheria, Small Pox, Scarlet Fever, Typhus, etc., that funeral of a public character should be allowed, as eminently conducive to spread the same, and this Board will in future not permit such funerals to be held in any church or public edifice.

Resolved, That in the event of a contagious or infectious disease being reported to the office of the City Registrar, he be required to furnish a printed copy of instructions to the families and households, as the best means of preventing the spread of such contagious diseases, and to offer to furnish such needed assistance as may be required to prevent the same.

H. B. HORLBECK,
City Registrar.

At a meeting of the Board of Health held on the 16th February, the following resolutions were adopted:

Resolved, That in order to prevent the spread of contagious diseases, the City Registrar be directed to notify the families of those sick with contagious diseases, that during the period of liability to the spread of these diseases, the children of such families should not be allowed to attend any school.

At a meeting of the Board held on the 16th February, the following circular was adopted :

"You are requested to keep your children from school dur-
"ing the time from the commencement of disease until the
"sick person has passed the stage of desquamation, (peeling off of the skin,) in Measles and Scarlet Fever, and of dessi-
"cation, (falling off of the scabs,) in variola (Small pox,) and
"in diphtheria, until the physician states that the sick person
"is free from the disease, and until the room occupied, and
"clothing used, has been in each case disinfected."

The Board of Health declares a public or church funeral of any person who has died of Scarlet Fever, Diphtheria, Measles, dangerous to the lives of such as may attend, who have not had the disease, and require the family to limit the attendance to as few as possible, and to prevent the presence, so far as they are able, of those who have not had the disease of which the deceased person died; and to disinfect the room in which the deceased person was, the body of the deceased person, and the clothing and bedding used during the sickness.

The Board also advise the use of sealed wooden or metallic coffins, when the family can afford the expense.

H. B. HORLBECK, M. D.,
City Registrar.

BOARD OF HEALTH,
OFFICE, COR OF COMING AND WENTWORTH STREETS.

Sanitary regulations against small-pox, scarlatina, measels and diphtheria.

Every case must be reported to the City Registrar upon its first recognized appearance.

Care of Patients.—The patient should be placed in a separate room, and kept there until your physician determines that the danger of contagion has passed, and no person, except the physician, nurse, or mother, should be allowed to enter

the room, or to touch the bedding or clothing used in the sick room, until they have been thoroughly disinfected.

Infected Articles.—All clothing, bedding or other articles, not absolutely necessary for the use of the patient, should be removed from the sick-room. Articles used about the patient, such as sheets, pillow cases, blankets, or clothes, should not be removed until they have been disinfected by placing them in a tub with the following disinfecting fluid: 8 ounces of sulphate of zinc, 1 ounce of carbolic acid, 3 gallons of water. They should be soaked in this fluid for at least one-half hour and then placed in boiling water, for washing. Feather beds and pillows, hair pillows and mattrasses, and flannel or woolen goods require fumigation, and should not be removed from the sick room until after this has been done. Whenever the patient is removed from the sick-room, notify the City Registrar, when the Health Detective will as soon as possible thereafter perform the work of fumigation.

All vessels used for receiving the discharges of patients should have some disinfecting fluid constantly therein, and, immediately after use by the patient, be emptied and cleansed with boiling water. Water closets and privies should also be disinfected daily with the same fluid, or a solution of Chloride of Iron, one pound to a gallon of water, adding one or two ounces of carbolic acid.

All straw beds should be burned, but should not be removed from the sick-room without a permit from this office. They will be removed by the Health Detective.

It is advisable not to use handkerchiefs for cleansing the nostrils and mouth of the patients, but rather, soft rags, which should immediately thereafter be burned. The ceilings and side walls of the sick-room, after removal of patients should be thoroughly cleansed, and lime washed, and the wood work and floor thoroughly scrubbed with soap and water.

By direction of the Board of Health.

H. B. HORLBECK, M. D.,
City Registrar.

RELATIONS BETWEEN THE MORAL AND PHYSICAL MAN, BY WM. MARTIN.

GENTLEMEN: At the request of my highly esteemed friend, the President of your honorable association, I submit to your consideration a few thoughts on the relation existing between the moral and the physical man, or the effect of the morals on the health of the body, and also the moral effect of corporal punishment for crime.

To my mind, crime and punishment, or sin and suffering, are as inseparable as the sun and light, or as cause and effect.

The fundamental law given by our great Creator in the garden of Eden was, "Obey and live, disobey and die." This law has never been reversed or modified; it is word, it ever has been and ever must be in force; it is part and parcel of the Divine nature, it is God in nature, and consequently man, as every other creature, is under its control and amenable to the penalties of this law.

When the Great Author of our being was about to create man, He said, "Let us make man in our own image after our likeness." "So God created man in His own image, in the image of God created He him." This image or likeness was a spiritual or moral likeness, and man being in the moral image of a pure and holy God, was himself necessarily pure and innocent, but he sinned; he transgressed the law of God, he violated the law of nature and became subject to sickness, pain and death. For "by one man sin entered into the world, and death by sin, and so death passed upon all men, for that all have sinned." It is also written in the word of Eternal Truth, that "Bloody and deceitful men shall not live out half their days." This is the *rule.* Such is the constitution of man, composed, as he is, of soul and body, or spirit and matter, and such is the relation between these component elements that you cannot possibly disturb the one without more or less deranging the other; even a toothache or a headache, however slight, throws the mind off its balance and unfits it for the exercise of its normal powers. Let this physical dis-

quietude continue and increase, the pressure on the mental man will also increase until the mind is in ruins, and consequently the moral man is destroyed. This final catastrophe, which often ends in the destruction of the entire man, physical and mental, is superinduced and facilitated by innate moral depravity, fostered and indulged, by which the man is led into vicious habits; sin is committed, the law of God is violated, the law of his nature is disturbed, he is unmoored—his soul, his moral man is without an anchor, rudder or helm, he is driven by the fierce winds of passion hither and hither, his mind is like the waves of the sea that cannot rest.

The legitimate effect of sin, or moral depravity, is from bad to worse; the appetite grows and strengthens upon that on which it feeds, until the poor sinner finds himself completely shorn of his strength; he is bound hand and foot, soul, body and spirit, blighted, blasted, ruined. Oh! how often have I seen the tears and heard the groans and lamentations of the poor inebriate, who had wasted his substance in riotous living, now pleading for help, deploring his present condition, and absolutely abhorring himself, as in dust and ashes, but having no power to extricate himself, no control over his depraved appetites and passions, yields to despair, and sinking into an untimely grave, the victim of the intoxicating bowl. The whole land is filled to-day with the graves of the untimely dead from this cause alone, while there are many other open paths, leading to pain, disease and early death from moral obliquity, equally fatal, though perhaps not equally patent to the superficial observer. Oh! what a catalogue of self-murders will be revealed at the final day, when the "books shall be opened," and all secret things be made known.

"Oh! that there were such a heart in them that they would fear me and keep all my commandments always, that it might be well with them and with their children forever," saith the Lord. The physical effects of moral depravity are not always confined to the immediate perpetrators of crime, but in many cases they descend to their innocent progeny. "For I, the Lord, thy God, am a jealous God, visiting the iniquity of the fathers upon the children to the third and fourth generations

of them that hate me." The son is prone to imbibe both the moral and physical proclivities of the father. In how many thousand instances have we seen blighted youth and early death, or a lingering life of pain and trouble, as the result of inherited infirmity; for as it is with the physical, so it is, in a great measure, with the mental and moral man.

In the years 1830–31, I frequently passed a farm house near Concord, North Carolina, where lived a poor, degraded old woman, with two grown sons. I saw those young men several times, and they always bore evident signs of being in a state of intoxication. I inquired into their history, and learned from a gentleman who lived near, the following facts, as nearly as I can recall them, after a lapse of fifty years. The mother was a woman of loose habits, the father a man of notoriously bad character, and a great drunkard, who frequently visited this woman. He was a member of the Legislature, and on one occasion, returning from Raleigh, he brought a jug of whiskey, and, as usual, called at this woman's house, when they spent several days and nights together in a drunken carousal, and these two young men were the twin fruits of that occasion. Poor fellows! They had all the symptoms of drunkenness, the idle, meaningless stare, the silly laugh, the tottering gait, the staggering walk of a drunken man. (Query. Was this the natural effect of a natural cause?)

But what relation has all this, morally and physically, to crime, such as may be punished by the Judges? Much, every way, chiefly in the fact that evil proclivities yielded to and indulged in, so weaken the moral sensibilities that the animal gets the mastery of the moral man, and thus he is led on from act to act, from bad to worse, until he plunges into some crime for which the laws of his country hold him responsible. "The beginning of strife," *of sin*," is as when one letteth out water." Hence the invention of prisons for the incarceration and punishment of criminals, and the protection of society.

Prisons are of very ancient date. The first we read of were in Egypt, where Joseph and two of the King's Ministers were confined, and this seems to have been a place of punishment as well as of confinement, for the prisoners were put in dun-

geons, and Joseph's "feet were hurt with fetters, and he was laid in irons." These prisons had two objects in view, viz: the safety of the community, and the punishment of the evil doer.

The first prison having any of the elements of a modern penitentiary was among the Philistines, where Sampson was imprisoned at hard labor; his hair also was closely trimmed and shaven; he, too, was bound with fetters, and he did grind.

All ancient prisons seem to have been places of punishment, without any reformatory purpose or influence whatever, having no regard either for the moral welfare or the physical comfort of the prisoner. This indifference to the condition or wants of the imprisoned continued down to a very late period.

Some time in the latter part of the Eighteenth Century, that great philanthropist, John Howard, who, "being dead, yet speaketh," drew the attention of the civilized world to the condition of prisons and prisoners generally, both as to their physical and moral state. From that time others have followed in the footsteps of Howard, and the prison has been and is looked upon not merely as an institution of punishment or a cage for bad and dangerous men, but also as a place for their reformation. An institution not merely to protect society and prevent crime by confining the perpetrator, but to improve his morals to abate his evil propensities, to correct his habits, elevate his aspirations, so that he may be returned, perchance, to society a better man, and become a useful citizen.

The prison, therefore, should be to the moral man what medical treatment is to the physical; it should be a moral hospital, while it should ever be so conducted, and under such influence, as to prove a terror to evil doers and a praise to them that do well.

Both the moral and physical condition of prisons, in regard to their effect on their inmates has for years past attracted the attention of the good and wise throughout the Christian world. Various schemes of reform have been suggested, many experiments have been made, and great improvements have been

the result. Most, if not all, State or National prisons, are now under the supervision of humane laws, administered by responsible and judicious agents, so that the physical wants of the inmates are kindly looked after, and their sanitary condition carefully watched and guarded.

I am happy, too, to know that, as a general rule, the moral or spiritual wants of prisoners are provided for by competent religious teachers of known Christian character, whose sole business is to preach to them the simple Gospel and teach them the fear of God, and their duty to their fellow men. By this means, and this only, may their morals be radically improved, and their evil habits permanently corrected.

This leads me to consider the sanitary effect of good morals or a religious life on the physical man. And I begin with the Divine precept: "Honor thy father and thy mother, that thy days may be long in the land which the Lord, thy God, giveth thee." Another to the same effect: "Godliness is profitable unto all things, having the promise of the life that now is, and of that which is to come."

Suppose I go to the hovel of wretchedness, as in my sacred profession I have often done, and find there the victims of sinful habits, whose substance has been wasted in vicious living, the body enfeebled, the mind dissipated, demoralized, harassed, discouraging the entire household, father mother and children all in rags; one hopeless, universal ruin, property gone, health, character, self-respect, hope, all gone. I sit down in this place of wretchedness and woe, and begin to talk of the comforts of life, and how these people might better their condition by a fixed resolve to "cease to do evil and learn to do well." They sadly recount to me the history of the past, one long, dark catalogue of failure, leading on to greater failure of disaster after disaster, and crime leading to still deeper crime, until they have reached this lowest deep, from which the despairing cry comes: "No man careth for my soul!" They are now prepared for all sorts of wickedness. Shall I undertake to reform these degraded outcasts by force, by corporal punishment? Shall I cast them into prison? Shall I bind them by fetters? Shall I subject them to hard labor, or inflict upon

them physical pain? All this may be in some cases important, even necessary; but, alas! "Though thou shouldest bray a fool in a mortar among wheat with a pestle, yet will not his foolishness depart from him." He is a fool still; his heart is unchanged. But let me approach these wretched beings kindly, no matter where; they may be in the very lowest deep of despair, they may be already in the dungeon, their bodies may be wasted, they may be at the point to die, and let me reach down through all the filth and slime that surround them, poisoning both soul and body, and introduce but a single ray of divine light; let me kindle but the smallest spark of hope, for "by hope we are saved." "Some hath He quickened who were dead in trespasses and in sin." Let me say to one of these poor creatures: "Christ Jesus came into the world to save sinners." Let me sow in his heart a grain of faith as small even as a "mustard seed." Let me cause him to see himself in the Gospel mirror, how low, how degraded he is, and at the same time point him to the remedy; let him see the open gate of hope: give him to feel that he is still a man; that the stamp of immortality is upon him; enable him to realize that the principle that moves and stirs within him is the soul of man; Jehovah's breath, and that while "Hell moves beneath to work his death, Heaven stoops to give him life." Let him become "a new creature in Christ Jesus." Let his heart be renovated, changed, his morals purified, his habits corrected, give him hope, rest, joy, confidence, and you will soon see the outward marks of impurity disappear, for the man has become a new creature, and his physical being renewed is the necessary result of the moral regeneration that has taken place.

What may we predicate of these changes for a man in prison? Is it probable that when he has served out his time and set at liberty, that he will lead a new life? or will he not most likely fall back into his old habits? This will, of course depend very much on the influences and circumstances by which he is then and there surrounded. We often find, even among enlightened, educated people, those who have fallen and been reformed, and who have all the

motives of family and position in society, in addition to health and the hope of salvation, relapse, return like the "dog to his vomit again." So we should not be surprised, neither should we be discouraged, if some of those who have suffered the penalty of the law do go back to their evil ways. A great work is accomplished if one in a hundred is saved and returned to society, "clothed and in his right mind."

But much of our success in reforming the vicious, fallen, degraded men and women of our race, depends on their surrounding, and the way in which they are treated by society.

Take for instance a poor, fallen women, her body emaciated by disease, and her moral powers all enervated, friends gone, character gone, and without means of support. Awake her to a sense of her shame and wretchedness, convince her that she is still a woman, create in her a desire for reformation or determination to become better, and with the purpose or hope of accomplishing it, and let her set about the great work of reform, let her "come out from among the wicked;" but then let society turn her back upon her, let it frown upon her, let no one take her by the hand, let her receive no encouragement, no help from the good and virtuous, and the consequence is, in most cases, she despairs and gives up the struggle and is lost forever.

Take a man, he may have reached the lowest stratum of human depravity; he is in prision, in the penitentiary, he is suffering justly the penalties of a violated law; awaken him to a sense of his misery; let him see whence he has fallen; convince him that the germ of manhood is still within him, that there is a spirit of divinity that stirs within him. Let him say, "I will arise and go to my father." Let him be truly penitent, aye let him be thoroughly reformed. But then let the world disown him, let good people look down upon him, make him feel that he is an outcast; let no one employ him or even give him a day's work by which he may earn his daily bread, and the chances are, that giving way to despair, "the last end of that man will be worse than the first." The prayer of the wise man was, "give me neither poverty nor

riches; feed me with food convenient for me; lest I be full and deny Thee, and say who is the Lord? Or, lest I be poor and steal, and take the name of my God in vain." Poverty is sometimes a terrible ordeal; so is the scorn of our fellow men. In behalf of the fallen, the degraded, the worst possible cases, let society consider, let good men and women think; let members of the Christian Churches reflect what might have been the condition of many of us had we been similarly situated. "Who maketh thee to differ?" An eminent minister of the gospel, once exclaimed, on seeing a culprit led to the gallows, "There goes," (naming himself,) "but for the grace of God." Let all remember that "Jesus Christ came into the world to save sinners," and that "he which converteth a sinner from the error of his way, shall save a soul from death and hide a multitude of sins." It was charged against the Great Teacher: "This man receiveth sinners and eateth with them."

How sublime the following example, and how grand the result. A young man of wealth, education and position, tired of parental restraint, asked and obtained the portion of his father's estate that should fall to him. He left his father's house, turned his back on all former associations, and plunged into dissipation and wickedness of all sorts, until as a natural consequence, his money all gone, wasten in riotous living, he finds himself a homeless, friendless, penniless vagabond, none to sympathize with him, none to care for him, For

> "The friends who in one sunshine live,
> When winter comes are flown."

But in this helpless, friendless, hopeless, starving condition, he remembers his father's house, and resolves to make an effort to reform; he says to himself, "I will arise and go to my father," "I will confess my folly; I will forsake my sin." And having resolved, he made the effort; he retraced his steps and returned to his father's house. The father saw him coming; his heart was moved toward him; he ran to meet him, received him kindly, and restored him to favor. Let society act the part of this father; let all good people follow

this example, and many hopeless outcasts will be saved, restored to society, their families, their country and their God.

To conclude, my opinion is, after long and careful observation, that where prisoners are huddled together and left without moral or religious influence, whether they are in idleness or at hard labor, the prison becomes an apprentice shop to teach vice, and as a general rule its inmates will come out ten-fold more accomplished in villainy than when they went in. Punishment alone never reforms the morals of the culprit.

As to the physical effect of long continued imprisonment, I am fully satisfied, after careful examination, that a system of well-regulated labor is by far the best ever yet devised by man, both for soul and body. Indeed it is the only system ever yet inaugurated, as far as we can judge, where the moral, mental and physical man may be kept from harm, and improved or developed into future usefulness and happiness, and this system is pursued in one State Prison as well as in almost all others.

But in addition to the restraints of the body and other corporal discipline of prison life, let proper moral and religious instructions be given; teach the imprisoned the fear of God; teach them that "it is not all of life to live," that there is a life to come, that they "must appear before the judgment seat of Christ;" that they have souls that must forever live in happiness or woe; and the prison may become to many of them a spiritual Bethel, and they will come out reformed men and become useful citizens.

Let all good men pray for the imprisoned, and especially let me ask the prayers of all who fear God, for the success of the gospel in our own State Prison, that it may have free course and be glorified even there.

ON THE EPIDEMIC OF DENGUE—AS IT PREVAILED IN THE CITY OF CHARLESTON, S. C., 1881.

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BREAK-BONE OR DENGUE.

In the Autumn of 1879 several of the medical gentlemen of the City of Charleston attended cases of "Break-bone fever, or of Dengue." Most of these few cases were confined to a limited locality near the centre of the city. During the Winter the disease remained in abeyance. The Winter not being particularly severe—the minimum temperature of November being but 30°, of December 31°, of January 30°. The mean temperature of January, February and March 38°, April 67°, May 73°, June 80°, July 83°, August 81°, and September 75°. So that the entire year may have been characterized as rather warm. The earlier portion of the year was very dry. The winds prevailing from the Southwest. During the earlier months of 1880 there then had prevailed an epidemic of Febrile Roseola, German Measles, or Rotheln. The first cases of the Dengue as an epidemic were seen early in March; in June and July it spread slowly. About the middle of August and September the disease was prevalent everywhere throughout the city, and in September also in several of the neighboring towns and villages. At the end of September it had began sensibly to decline, running on into October and November, and a few cases seen as late as the latter portion of December, although it had become cold, and ice had formed in the city on the 1st and on the 25th of November.

Its attack was general. There was shown no immunity from age, or race, from having had it (the disease) before, or

from having had the yellow fever in previous years. Its origin was very obscure. Some physicians at first thought it due to local causes, such as the upturning of the surface in the streets, until ihey learned that it was prevailing in other places, as New Orleans, Savannah, Augusta, and probably Key West, on this Continent, and in Egypt and in Africa, and elsewhere in the Eastern hemisphere; a few thought it dependent upon malaria, and a few attributed it to contagion, to which it was impossible to trace it to the initial case. It was impossible to trace its commencement to any one portion of the city, although some physicians regarded the first cases of this year as having occurred in the Northeastern suburbs of the city. Its period of incubation was not determined. The number of cases was computed to have been about fifteen thousand, most of whom sickened about the same time. During its prevalence, and after, the community, especially those who had had it, suffered from fever, boils, abscesses, carbuncles, whitlows, and the like disorders, and several cases of erysipelas occurred. The mortality was very slight; but seven deaths were attributed to it; more than half of those who died having previously been sick from other diseases.

The attack mostly came on with chill, which rarely amounted to a severe rigor. After a few hours of malaise, sometimes, the pains and fever came on suddenly and severely, headache, pain in the back and limbs of the greatest intensity, with a temperature from of 101° to 105½°, with a full pulse, varying from 90 to 140, exceptionally the pulse was below the normal average, weak, compressible, intermittent, and when the pyrexial stage had passed, the temperature frequently descended one or two degrees below the normal standard. As seen in Charleston, but not always elsewhere, there was but one febrile paroxysm, whose duration varied about seven days. During this single paroxysm the temperature oscillated a degree or two between the morning and the evening. In a number of instances, but not in the majority, remissions occurred, not amounting to entire intermissions. In some few marked intermissions occurred but for a few hours only—not for two or three days, as noted by Dr. Cochran, in Mobile. The

tongue generally became broad, white, flabby, swollen, its edges often marked by indentations from the pressure of the teeth; sometimes, however, it was elongated and pointed, clean and white; then, as the disease progressed, broad and rather dry, with dark tip and edges, if the disease became threatening, dry, fissured, but rarely bleeding; at times epigastric tenderness, with nausea, and no appetite, with a positive repulsion for food, and even water, and this for days. The condition of the bowels was generally constipated, but, again, in others, diarrhœal, and a few with dysenteric symptoms; two or three with rather profuse hemorhagic stools; one or two even with tarry evacuations. In the largest number there was an eruption, resembling in some erythema, in others roseola, urticaria, or eczema. Some again, when there had been much sweating, had, combined with the eruption, sudaminæ. The eruption, it matters not of what variety, appeared generally upon the neck, chest, face, body and limbs in this order. The skin, at first dry, soon became covered with profuse sweating. Occasionally the sweating commenced early with the disease and accompanied it throughout its course. Hemorrhage was rare, but in a few cases, especially with children, it took place from the nose; In a very few from the tongue, from the bowels, stomach; some one or two had bloody expectoration, with much cough. Menstruation was usually brought on before its period, and was profuse. Premature labor sometimes was occasioned by the attack. Albumen was rarely discovered in the urine; occasionally the urine was diminished. In many cases great mental depression and insomnia accompanied the malady, and continued for a long time after, with a disposition amounting at times to an intense desire for sleep, which in some was almost unbearable, and the sleep obtained found unrefreshing, and not diminishing the uncontrollable longing. The individuals who suffered from this symptom regarded it as the one most distressing of all they experienced. It undoubtedly was a nervous symptom closely allied to the delirium, from which most children suffered.

The sequelæ were frequent, but not threatening to life; the immediate ones, great prostration, sleeplessness, anæmia, night

sweats, hysteria, neuralgias; the remote, diarrhœa, boils, carbuncles, whitlows, abscesses; the most severe otorrhœa conjunctivitis, deafness, aphonia, œdema, icterus, cystitis, rheumatism, temporary paralysis of the inferior extremities; each of these in a very few instances. Pain was the chief characteristic of this epidemic, disproportionate to all the other symptoms: Pain, intense and persistent, with fleeting exacerbations, and great restlessness, worrying and harassing, day and night, depriving the patient of his rest: Pain which no change of position or attitude could assuage, and no treatment could allay: Pain in every portion of the body, the head, the small of the back and limbs, in the muscles and in the joints, seemingly in the very bones themselves, with little or no redness or swelling of the joints. Long after the fever had passed away, long after the general health had returned, the patient continued to suffer; the pain only slowly diminishing with time, and leaving a tendency to return upon the slightest exposure, the most trivial imprudence—the slightest "cold" or catarrhal attack ushering it in again with intensity, even after months had elapsed, in this peculiarity resembling somewhat the pain of chronic rheumatism.

As stated, the disease was not confined to this city alone—it seemed somewhat pandemic—prevailing in most of the Southern Atlantic cities—in several of those situated upon the Gulf, and in the Southwest. In the Eastern Hemisphere it likewise was diffused over large regions of countries.

In this State it was seen at Moultrieville, Mount Pleasant, Beaufort, Port Royal, Charleston, Georgetown, Summerville, Branchville, Aiken, Midway, Blackville, Bamberg and Columbia. It prevailed in Savannah and Augusta in the State of Georgia, generally throughout the Southwest, and at New Orleans. It did not extend into the middle or upper portion of the State. Those few persons exposed to it on the seaboard and who sickened when visiting interior places, did not spread the disease among those with whom they sojourned. It seemed to select cities, towns and villages, seldom or never extending to, or affecting the surrounding scattered country residences and farms.

This epidemic of dengue may possibly possess an interest for us far exceeding the personal suffering it produced or occasioned, and the slight mortality attending it, especially for those residing in the middle portions of our State. It may have been a note of warning to what may be in the future, for since the time of Osgood, who described the first epidemic as it occurred in Havana, it has been connected with the yellow fever. From him originated the idea which we find influencing all who have since had their attention turned to it, that these two diseases are one, or at least dengue is but the modification of yellow fever. To us, if this is so, the relation is a momentous one. Much depends upon the identity of the two, and more especially to those who live in that portion of the State over which, as we have seen, the dengue has so recently passed. Formerly, prior to the year 1878, the yellow fever was confined to the cities of the seaboard. This seemed to be its law. With us, confined even in more limited boundaries, epidemics after epidemics occurred and were restricted to very narrow tracts. Even a few hundred yards from where it originated or from where it was prevailing, only a block or two in the city, afforded protection. For many years the larger portion of Charleston had never been encroached upon, and it is only within recent years that the entire city has become dangerous when the yellow fever has prevailed; before 1845 this was not so. The removal of a stranger from the lower and eastern portion of the city to the upper and western part invariably assured immunity and was resorted to for that object, and we remember instances after instances when this was done with safety, but within these latter years every portion has become infected when the disease prevailed. The law continued to hold, however, that the cities or the seaboard, with one or two exceptions only, as Augusta, were the only ones smitten. But in the year 1878, in the farther South and in the Southwest, this law was violated, and the yellow fever, initiating a new era, spread upwards from the coast, ravaging the cities of the interior, and causing a mortality frightful and unprecedented, such as occurred at Memphis—which called forth the sympathies of the world. The

disease generally followed upward the streams of the rivers and its branches, occasionally, even, though rarely, the tracts of the railroads until large interior portions of some of the Westrn States were invaded.

Within this State this has never been the case. The banks of our rivers have never been affected. The numerous little towns and stations upon our railroads have invariably escaped. As an epidemic it has never visited Summerville, but thirty miles distant, certainly never Branchville, Barnwell, Orangeburg, Bamberg, Blackville, Camden or Columbia. If then there is an identity of the two diseases, if the yellow fever and the dengue are but one, the difference only being but in degree, but in plus and minus, then these portions of the State, those over which the dengue has passed, have already lost their immunity, and the yellow fever is obeying again the exceptions of the law, or its course began in 1878. And at the next epidemic which happens in Charleston, be it near or distant, may we not reasonably expect that it will renew this march of its congener, the dengue of 1880, spreading upwards from the sea coast to be arrested, it may be, in its invasion only by the elevation of the mountainous regions.

It becomes us then to endeavor to ascertain, if possible, the facts upon which the opinion of Osgood and others have been founded, and to determine if it can be done, if the dengue and the yellow fever are the same; to ascertain this it is necessary at first to remove an element which has already, and may again create confusion. Whenever there has prevailed in the city of Charleston an epidemic of yellow fever, there has likewise occurred a second, both running their courses simultaneously. That of yellow fever, with its recognized fatality; that of the second with no mortality at all. This benign epidemic has unfortunately within latter years been designated brokebone, from its chief symptom, excessive pain. It is a continued fever. It never attacks those who have just gone through the greater epidemic, nor do those who have passed through it suffer from yellow fever, the one protects mutually from the other. It is a fever which does not generally attack the citizens and then exceptionally if there has been an absence from the city

for successive summers. It does not attack those who in former years have had yellow fever, but the stranger, or the comparative stranger, and the young of the city. The colored population generally escape, suffering in numbers from it in about the same proportion that this class suffers from the yellow fever. It also affords immunity from a subsequent attack. Its symptoms are so closely allied to those of yellow fever that within an early period running from a few hours to four or five days, the two cannot be distinguished the one from the other, it matters not how experienced the physician, or how very much observation and attention is directed to the patient, or how assiduously instruments of precision are employed. The distinction rests with time, with time alone. If the unfortunate individual has been stricken with the yellow fever, with time, the symptoms and the condition become more severe as the morbid characteristics of that disease unfold themselves. If the patient has brokebone, the high fever and the painful head and limbs abate with time, the disease, becoming milder and gradually declining, passes off.

This form of disease is so well known to the physicians of Charleston, and has so often been discussed in the Medical Society of South Carolina and elsewhere, that it is not necessary to dwell further upon it. But having decided opinions relative to its pathology and nosology we have no hesitation to express them here. We regard the term which has been applied to it as a misnomer and mischievous in itself, (that or "breakbone") leading to a confusion between it and dengue, whose synonym is breakbone. We consider it as distinctly different from dengue, having in common with it but those painful sensations which we also see in influenza, catarrhal fever, rheumatism, etc., not having an eruption, and even when fully developed being mono-paroxysmal. We see in it but the minor form of yellow fever, the slighter attacks, an abbreviated variety of that fierce disease, yellow fever. It is the lions whelp which accompanies the lion. As in other epidemics, as with measles, with scarlatina, with small pox, with cholera, with the plague, etc., there are always minor forms,

not every case happening in every epidemic being malignant. So with the yellow fever we have this as the milder form, the number of cases of it seemingly making it a second epidemic.

If this is not so, then, the yellow fever has no milder form, and unlike every other disease of which we have knowledge, each case is malignant, none benign; and here also the almost unparalled fact is observed, that of two separate diseases resembling closely each other *both always* prevailing whenever yellow fever occurs. But be this as it may, we must here leave it, for it is not the "whelp" which we find of so much interest now to contrast with the yellow fever. But that breakbone, or dengue proper; that of 1828, 1850, 1880, such as is described by Rush, Dickson, Wragg, Thomas, Holliday, Cochran, Forrest and others, a disease which no doubt presents variations in its epidemic visitation, but one which no reasonable observer can doubt the identity of.

Dengue in Charleston presented itself in the mildest of its forms that of one paroxysm of fever; when fully developed it is an intermittent disease. (See Dr. D'Aquin, New Orleans, Zuelerin Ziemssen, Dr. Aitken in Reynolds, Dr. Jerome Cochran, Dr. Thomas, of Savannah; Drs. Porcher, Forrest, H B. Horlbeck, of Charleston, and Dr. Holliday, of New Orleans, speak of it as having one paroxysm, but all notice remissions.)

Contrasting yellow fever with dengue. We see

Dengue—Intermittent when fully developed.

Yellow Fever—But one paroxysm.

Dengue—Not arrested by cold.

Yellow Fever—Arrested by cold.

Dengue—Longer in its course; convalesence prolonged, with returns of pains.

Yellow Fever—Shorter course; rapid convalesence; no recurrénce of pain.

Dengue—Accompanied by an eruption.

Yellow Fever—No eruption.

Dengue—Non hemorrhagic; no black vomit.

Yellow Fever—Hemorrhagic; black vomit.

Dengue—Generally preceeded by chill, sometimes advent sudden, malaise, etc.

Yellow Fever—Only occasionally preceded by chill; generally onset abrupt—chill, if any, very short in duration; no malaise.

Dengue—Prevails generally where yellow fever has been.

Yellow Fever—Albumen generally in renal secretion.

Dengue—Albumen but rarely; frequently where yellow fever has not been, as in Egypt, India, etc., Asia, etc.

Yellow Fever—Usually where it has visited before; never seen in Asia, or Egypt.

Dengue—Is slightly contagious or infectious—if at all.

Yellow Fever—Generally thought infectious.
contagious.

Dengue—Attacks those equally who have had it before with those who have not; attacks citizens equally and as severely as foreigners.

Yellow Fever—Gives immunity to those who have been formerly attacked, to citizens, selects foreigners.

Dengue—Apt to be followed by phlegmonous inflammations.

Yellow Fever—Not apt to be followed by phlegmonous inflammation.

Dengue—No discoloration of surface or of the conjunctivæ; no discoloration of urine or skin.

Yellow Fever—Discoloration.

Dengue—Duration—seven days and beyond.

Yellow Fever—Seventy-two hours, rarely beyond.

Dengue—Gastric symptoms not usually pronounced.

Yellow Fever—Pronounced.

Dengue—Pandemic.

Yellow Fever—Generally epidemic.

These symptoms and characteristics it is true are but few; it may be too few to the minds of many for us to draw a positive differential diagnosis, but unfortunately they are all we possess. To our minds they *must* and do suffice, but we may reasonably hope that with the advance of our process of obser-

vation, and with the great interest that is now centered upon epidemics, within a reasonable period, the differentiation will be confirmed.

Appended to this account of the Dengue we attach the Meteorological Table for the City of Charleston, for the year 1880, and to exhibit the amount of rainfall, a table inclusive of the last decade.

RAINFALL FOR LAST DECADE.

	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
January	.85	3.78	4.13	3.50	7.77	.63	4.44	7.83	1.74	2.15
February	3.74	5.13	2.27	10.45	4.27	2.43	2.96	3.15	4.56	3.97
March	4.31	9.78	3.05	3.45	6.37	2.54	7.86	1.94	1.44	2.01
April	4.30	2.46	1.33	2.95	4.56	4.93	15.00	9.08	6.29	3.65
May	3.74	6.30	4.71	5.50	8.51	3.77	2.71	6.32	3.36	.90
June	3.19	1.87	6.29	2.29	3.15	14.98	10.31	5.47	3.29	2.18
July	.81	2.30	6.97	13.74	1.05	11.26	10.21	12.10	7.77	5.77
August	16.1	7.81	12.94	7.06	1.91	5.10	2.21	10.73	4.50	3.07
September	5.29	7.88	8.18	6.66	4.28	11.20	6.30	8.28	5.90	4.89
October	2.86	3.89	2.07	1.85	3.90	14.32	4.81	3.98	6.74	9.19
November	3.64	3.40	5.08	2.11	3.38	1.35	7.02	3.18	3.70	5.50
December	2.00	2.40	4.94	2.94	1.92	5.85	4.22	5.38	1.00	3.80
Total	50.97	57.36	61.97	62.51	50.97	78.42	78.11	77.44	50.27	46.49

As it may be of interest to many to note the variations which the epidemics of Dengue presents, we give the conclusions arrived at by Dr. D. C. Holliday, who studied the disease as it prevailed in New Orleans, in 1880.

(Paper read before Public Health Association and published in their transactions.)

1. "Dengue is not malarial; is monoxysmal; type continued; remittent; duration from three to five days.

2. It is extremely sweeping; no age, sex, color, exempt; no respect for previous attacks of yellow fever or dengue.

3. The eruption or efflorescence occurring in forty per cent. of the cases, showing no uniformity in character or appearance.

4. Temperature often very high; suffering excessive; prostration often very great.

5. Albumen reported in a sufficient number of cases to dispute the assertion that it is never found.

6. The tendency to hemorrhage positively proved; generally slight; sometimes serious, rarely or never fatal."

METEOROLOGICAL SUMMARY.

[COMPILED FROM THE SIGNAL SERVICE RECORDS.]

DATE.	BAROMETER.										THERMOMETER.						Mean Relative Humidity. Local Observations. (Per Cent.)	WIND.								
	MEAN OF—						RANGE.				MEAN OF—				RANGE.			PREVAILING DIRECTION.	NUMBER OF MILES.					Maximum Velocity During Month	Amount of Rain or Melted Snow. (Inches and Hundredths	Number of Days on which Rain or Snow Fell.	Number of Auroras
1880.	LOCAL OBSERVATIONS.	TELEGRAPHIC OBSERVATIONS. Corrected for temperature, instrumental error, and elevation.			TELEGRAPHIC OBSERVATIONS. Corrected for temperature and instrumental error only.			Highest.	Lowest.	Difference.	LOCAL OBSERVATIONS.	TELEGRAPHIC OBSERVATIONS.			Maximum	Minimum	Difference			Noon to 6 P.M.	6 P.M. to midnight.	Midnight to 6 A.M.	6 A.M. to Noon	Total.			
		A.M.	P.M.	Midnight	A.M.	P.M	Midnight					A.M.	P.M.	Midnight												
January	30.158	30.169	30.126	30.167	30.112	30.073	30 110	30.468	29 687	.781	58.2	53.7	63.6	56.9	77	33	44	79.1	N. E.	1254	1288	1515	1253	5310	24	2.15	7	...
February	30.177	30.190	30.146	30.182	30.132	30 090	30.125	30.546	29.630	.916	56.4	51.6	61.9	55.0	78	36	42	69.5	S. W.	1186	1522	1750	1152	5590	38	3.97	10	...
March	30.183	30.097	30 047	30.086	30 038	29.992	30.029	30.400	29.565	.855	61.2	57.7	79.0	60.1	80	40	40	68.8	S. W.	1519	1827	2175	1606	7127	27	2.01	11	...
April	30.111	30.131	30.073	30.108	30.045	30.017	30.055	30.438	29.828	.610	67 0	63.1	73.3	64.7	87	39	48	71.2	S. W.	975	1590	2056	1283	5904	25	3.65	10	...
May	30.119	30.138	30.095	30.113	30.083	30.040	30.058	30.376	29.896	.480	73.7	71.3	77.6	71.8	89	53	36	70.4	S. W.	1122	1607	2101	1400	6230	25	.90	27	...
June	30.056	30.076	30.031	30.060	30.021	29.977	30.006	30.252	29.704	.548	80.6	77.7	86.5	77.9	100	62	38	66.8	S. W.	1308	1618	2264	1614	6804	24	2.18	5	...
July	30.024	30.040	29.996	30.024	29.986	29.943	29.970	30.181	29.855	.326	83.4	80.6	87.1	80.9	97	71	26	76.1	S. W.	1126	1329	1875	1334	5664	28	5.77	14	...
August	30.051	30.065	30.032	30.055	30 010	29.980	30.001	30.285	29.847	.438	81.4	77.8	86.2	79.8	93	69	24	72,8	S. W.	2000	1366	1117	1453	5936	25	3.07	11	...
September	30.082	30.094	30.056	30.090	30.039	30.001	30.036	30.297	29.778	.519	75.8	71.1	80.9	74.2	89	61	28	71.5	N. E.	982	1304	1488	1031	4805	24	4.89	9	...
October	30.127	30.142	30.096	30.124	30.085	30.044	30 068	30.447	29.738	.709	65.9	61.8	70.9	64.4	82	45	37	80.2	N. E.	1526	1703	1819	1483	6531	37	9.19	10	..
November	30.211	30.222	30 185	30.215	30.168	30.128	30.258	30.586	29.916	.670	53.5	52.0	59.2	54.6	74	30	44	77.3	N.	1591	1363	1252	1437	5643	22	5.50	18	...
December	30.114	30.124	30.068	30.125	30.071	30.007	30.066	30.578	29.770	.808	28.6	44.4	53.5	47.3	73	13	60	71.7	W.	1493	1317	1243	1424	5477	24	3.80	15	...
Sums	361.313	361.488	360.951	361.349	360.790	360.292	360.682	364.854	357 214	7.640	805.7	762.8	870.7	787.6	10.19	552	467	870.0	S. W.	16082	17834	20655	16450	71021	311	46.69	147	...
An'ual means	3 1109	30.124	30.079	30.112	30.066	30.024	30.057	30.404	29.768	.636	67.1	63.6	72.6	65.6	85	46	39	72.5	S. W.	1340	1486	1721	1371	5918	26	3.89	12	..

GENERAL REMARKS.

January	The principal features of this month were its high temperature, moderate rainfall and small number of rainy days.
February	This month is remarkable for its great range of barometer and thermometer.
March	The mean barometer for this month is below the usual; the barometer reaching the lowest point during the year.
April	Remarkable for its range of temperature and deficiency of rainfall compared with same month of last year.
May	This month is greatly deficient in rainfall, although having the greatest number of rainy days of the year.
June	Noted for its low barometer and high temperature; the thermometer reaching the highest point during the year; dryest month for a great many years.
July	This month is remarkable for its small range of barometer and thermometer; the rainfall is above the average.
August	Remarkable for low barometer and small range of temperature.
September	Mean barometer, thermometer and rainfall almost exactly coincides with corresponding month of last year.
October	Mean thermometer is five degrees below same month of last year; also remarkable for considerable per centage of humidity and want of rainfall.
November	This month contains the highest barometer of the year; the mean thermometer is lower than same month last year; noted for large number of rainy days.
December	Remarkable for great range of both barometer and thermometer; this month embraces the coldest day for a great many years.

Station: Charleston, S. C.

J. H. SMITH,

Sergeant, Signal Service U. S. A.

Compared with and corrected from the records on file at the office of the Chief Signal Office U. S. A., Washington, D. C., January 26, 1881.

This account, and it has been criticised by Dr. J. Cochran in the Alabama State Medical Association Transactions, 1880, who described the epidemic in Mobile in 1873, and who takes exceptions particularly to the assertion that the disease has but one febrile paroxysm : Supporting his opinion by citations from Aitken and Zuelzer and others, and stating that, "when fully developed it is a disease of three paroxysms, and between the first and second paroxysm there is an interval of from one to two days; between the second and third an interval of from two to three days."

Aitken in Reynolds' system of medicine, bases his description on the great West Indian epidemic of 1827—speaks of it as intermittent—Zuelzer states, "according to Wilde it generally lasts one or two days. Now the second paroxysm follows with a new and rather moderate elevation of temperature of a remitting character, and simultaneously with it, an exanthem shows itself upon the skin. Less frequently there is a relapse of the joint affection. The symptoms last for two or three days."

Dr. T. G. Thomas of Savannah, Ga., accords somewhat with Dr. Cochran. Dr. Thomas says : (Public Health Association Transaction, 1880.)

"There are a large number of cases which ran a mild and simple course, having but one paroxysm, with perhaps a slight secondary fever. But in many cases when the thermometrical record was kept regularly, the fever was found to intermit and remit, oftentimes without any regard to the hour of the day. The idea of dengue being always a mono-paroxysmal fever, arose prior to the constant use of the thermometer in practice, and that this error should have existed so long is easily comprehended; for in a long case, after a few days, the skin feels to the touch cool and natural; but accurate observation will show that there is still, abnormal heat in the blood."

As we have shown the epidemic which prevailed in Charleston resembled that described by Dr. Holliday in New Orleans, and we could readily adopt the conclusions which he arrived at.

For the Bibliography, I would refer to the learned and ex-

haustive article of Dr. Thomas, and also to Zuelzers article in Ziemssen's Cyclopedia. I cannot, however, leave the subject, without acknowledging my obligation to Dr. John Forrest, of this city, who by laborious work of patient observation, supplemented by the information gathered by him from numerous medical gentlemen, compiled the valuable report read before the Medical Society of South Carolina, and printed in the American Journal of the Medical Sciences, and which has in some degree furnished the data for this paper.

Since writing the above, my attention has been directed by a friend to an article read at the International Medical Congress in the Section of State Medicine, and also printed in the Glasgow Medical Journal, 1881, reprinted in pamphlet form for more general distribution, entitled: "On Epidemics of Dengue Fever; their diffusion and etiology," by James Christie, A. M., M. D., Lecturer Public Health, Anderson College, Glasgow. The article contains so much curious information; explains the origin and describes the disease in such a different form from what it assumed in Charleston, that I cannot but make use of it. As to the disease as Dr. Christie saw it in the Eastern Hemisphere; he says:

"The following account was written by me at the beginning of 1871, when I had no conception that the epidemic would extend beyond the limits of my private practice in Zanzibar. The disease was not ushered in by any observable premonitory symptoms, but was, in a very marked manner, a sudden seizure, the first symptom being pain and stiffness of the muscles, more observable in the palms of the hands and soles of the feet, elicited when any attempt at motion was made. In three cases, amongst Europeans under my charge, these symptoms were observed on rising from the dinner table; one of them a very intelligent boy about seven years, complained that he had difficulty in getting off his chair, owing to pain and stiffness of his body. This condition was speedily followed by a febrile stage, varying greatly in intensity. The skin hot and dry; the tongue red, but generally clean; papillæ elevated; face of a bright scarlet color, which disappeared on pressure,

but returned when the pressure was removed. The scarlet flush in every case peculiarly marked, extending from cheek bone to cheek bone across the bridge of the nose, and was accompanied with a puffy swelling. The appearance was almost identical with the usual symptoms of an attack of erysipelas of the face, and was so well marked that I always regarded it as diagnostic of the first stage of the disease. In addition to stiffness first felt, there was pain over the whole body, more especially in the shoulders, back, ankle joints and soles of the feet; and towards the close of the first twenty-four hours there was swelling of the small joints, and pain was always felt on pressing the articulations of the fingers and toes." Average duration of febrile stage about forty-eight hours; then a period of remission of two to three days; febrile symptoms completely absent, (intermission) with great debility and slight pains; on the fourth day slight return of the febrile symptoms, very much less than that before; on the fifth day an exanthematous eruption resembling erysipelas, the efflorescence less intense in color; spread over the entire body within forty-eight hours; originating from the head and extending downwards; when the eruption had reached its maximum intensity, the lymphatics began to swell, the occipital invariably. I never saw a case in which this did not occur.

At this stage the mucous membrane of the mouth and nose was implicated, and in severe cases that of the throat." "During the fifth and sixth days the muscular stiffness and pain continued, and there was usually excessive articular pain on the slightest movement. On the seventh and eighth day there was desquamation of the cuticle, and the acute stage terminated." Dr. Christie continues: Three epidemics have occurred within the Eastern Hemisphere; the first during 1779–84; second, 1823–29; the third, 1870 to 1875; or if we take into account certain recent sporadic appearances from 1870 to 1880. Discussing the etiology and diffusion of that of 1870–75–80, he says that "it is possible to study its history from its first appearance in Zanzibar in 1870, to its last in Cairo in 1880, tracing it step by step. The epidemic of 1823–29 commenced again in the Island of Zanzibar, and was

called the Denga; then to India, and from there to the Danish Island of St. Thomas in 1827, where it was called the Dandy fever; to Cuba, 1828, called there the Dunga; from Havana it infected the ports of the Southern States of America as far north as Philadelphia.

The derivation of the name, and the numbers of names applied to it, is quite interesting, but we have not space to present them.

The term dinga or denga, used on the East Coast of Africa in 1828 and in 1870, is almost identical with that given in the Island of Cuba in 1828. "If it be accepted as a reasonable explanation that both the disease and its designation, denga, was imported from East Africa to the Island of St. Thomas, the latter would be changed by the English-speaking negroes into the familiar term *dandy*, and by the Spanish-speaking negroes of Cuba into the equally familiar term dengue."

Of the etiology of dengue, Dr. Christie has such novel ideas, which, although he says they "are nothing beyond hypotheses," we think it will be of interest to state (to save space we must paraphrase,) the disease originated *de-novo;* the hypothesis that the germs of the disease might have remained dormant during forty-eight or forty-nine years, being too absurd to be entertained for a moment. There was nothing unusual in the meteorological condition. The sanitary condition of the city was bad; indeed, I may say as bad as bad could be, but except in one respect it was in its normal state. "During the previous eight months the population of the city had been affected with a remarkably severe epidemic of cholera, and out of a population of about 100,000 the estimated deaths had been from 15,000 to 20,000. During the months of December and January the chief occupation of the living consisted in burying the dead. Interments took place in the immediate vicinity of the houses, in the public market place, in the outskirts of the town; and when the disease was at its height, dead bodies were exposed in the bush and left on the sea beach. In the case of the slave population there was scarcely the semblance of burial, the body being hardly hid from view."

"I can testify from my own experience, that the effluvium from decomposing human remains, was, sometimes, especially at night, and in the early morning, when the atmosphere was still, quite distinguishable in the city. That this condition of matters must have had a deleterious effect upon the health of the people, is obvious. "From the very first, I regarded Dengue as a hybrid disease, though I could not account for the nature of the hybridism. Scarlatina I had never seen or heard of in the Island; and I could not satisfy myself that I had ever seen a case of measles. Prior to the cholera epidemic, I had seen only one case of erysipelas; and acute articular rheumatism was almost equally rare. In short, there was not, prior to the epidemic, any instances of acute diseases which I could imagine might result in the production of a hybrid disease such as dengue. The disease, however, must have had some cause originating from the conditions existing prior to July, 1870. As regards the etiology of the disease, the question may be considered, is it not possible that the cholera germ, or the *materies morbi* of cholera may be so modified by the product of human decomposition, as to give rise to a hybrid disease such as dengue?

It will be admitted that putrid emanations from the cadaver cause ill-health, and may even cause death; and it has been shown that the cadaveric alkalies have toxic properties, some of them being equal in activity to the strongest poisons. If chemical changes of such a nature take place in the cadaver, may not physiological or pathological changes also take place? The hypothesis is not unscientific, for in the vegetable kingdom, we have illustrations of hybrid plants dissimilar to either of their immediate progenitors, morphologically and physiologically. In plants, the production of first hybrids, where species have been intercrossed, take place very frequently; and the result of Mr. Darwin's investigations tend to show that every degree of fertility probably exists in hybrid races, "from zero to perfect fertility." It is generally admitted, however, that sooner or later, the fertility of hybrids become impaired, there being no evidence that any one race of plants or animals represents the results of permanent hy-

bridization originally induced between two distinct species. If the germ theory of disease be admitted, the possibility of hybridization must be admitted also. The physiological properties of the cholera germ and of certain products of decomposition are known, but reasoning from known facts, it would be impossible to predicate *a priori*, the physiological properties of the hybrid product. So also with the fever germ, the plague germ, and the typhoid germ. Each and all might be hybridized, and each would have its own distinctive features—a family likeness pervading the whole. We might have a cholera dengue, a yellow fever dengue, a typhoid fever dengue, &c., &c.

"Limits of time prevent me from discussing this part of the subject, but I may mention that a study of the epidemics which have appeared in the Western Hemisphere, force the conviction upon me, that they had the same connection with the results of *yellow fever* epidemics, that those of the Eastern Hemisphere had with cholera epidemics. Each were distinct varieties of the same disease, but not identical."

The importance of the subject to this State has been the warrant for the introduction of the analysis of this article and citations. It has been thought best to permit the author thus to speak for himself in his own language, so that there may be no misunderstanding, and although the extracts take up some space, still they are so suggestive in a sanitary point of view, and originate so many trains of reflection to the medical mind, that their introduction, I apprehend, need but little apology. From what I have elsewhere said, it must be evident, that I entertain no such view as Dr. Christie holds. I do not think that it comes from emanations of the dead. I neither believe dengue to be a hybrid, nor, as far as we can see, does it hold any connection with cholera, yellow fever, or typhoid, but regard it as an entity in itself and a disease which will ultimately find its position among the exanthemata.

J. F. P.

GLENN'S SPRINGS.

Glenn's Springs is located in Spartanburg County, So. Ca., in a hilly country dividing Fair Forrest and Tyger Rivers. It is five miles west of the S. U. & C. R. R., and twelve miles south of the town of Spartanburg. From the latter it is always accessible, with ample accommodations, after a drive of two or three hours, through a country beautiful and picturesque—under the shade of primeval forests, or by fields of thrifty husbandry.

"A hundred years ago," the early hunters discovered trails centering in a log at the foot of a hill, from which poured forth an "ever living stream," and tradition tells us, that for miles around this flat or bog was known as the "powder marsh," owing to the pervading odor of sulphuretted gases, and also that it was the favorite resort of the wild animals, as it is in our day for the cattle of the country.

Led by these observations, as well as by a popular impression, persons afflicted with skin diseases were accustomed to dig holes in the marsh, to be filled subsequently with water, in which they habitually bathed. Tradition chronicles many wonderful cures effected by these primitive customs.

In subsequent years, the site of the mineral spring was discovered, and, at an early day gained an enviable reputation for curative properties.

More than a half century ago, Mr. J. B. Glenn, from Union District, hearing much of the efficacy of these waters, purchased an interest in the property. He had lived in childless wedlock for years, his wife's health being much impaired, and, in the hope of benefitting her, moved to the Spring, where after a summer residence and use of the water, she was completely restored to health, and it is currently reported, in attestation of the invigorating virtues of these waters, that the good wife presented her lord with a son, who still lives and is an esteemed and honorable citizen.

Hence the "Powder Marsh" has ever since been known as Glenn's Spring.

CHEMICAL ANALYSIS.

I find in a manuscript record of the Spring, dated 1854, an analysis which I am assured was copied from the original, made by Dr. C. U. Shephard, Sr., and is as follows:

"It is a strong sulphurous water, one wine quart of which contains six cubic inches of sulphuretted hydrogen."

SOLID CONTENTS.

24 grains Sulphate of Magnesia.
10 grains Sulphate of Soda.
5 grains Sulphate of Lime.
4 grains Muriate of Lime.
3 grains Super-carbonate of Soda.

The present proprietors, Messrs. Simpson & Simpson, have received from Dr. C. U. Shephard, Jr., the following analysis, viz:

(COPY.)

CHARLESTON, S. C., April 30, 1880.

Analysis No. 2485, for Messrs. Simpson & Simpson, Glenn Springs, Spartanburg, Co., S. C.:

Material—A sample of mineral water, marked as from Glenn Springs.

ANALYSIS.

The water contains in one U. S. gallon,—

	Grains.
Sulphate of Lime	$91\frac{501}{1000}$.
Carbonate of Magnesia *	$3\frac{324}{1000}$.
Chloride of Sodium	$2\frac{216}{1000}$.
Chloride of Potasium	$\frac{525}{1000}$.

This water may be regarded as an unusually strong Sulphate of Lime Spring, and as serviceable in the treatment of such complaints as are benefitted by the use of Lime water.

(Signed.) CHARLES U. SHEPARD.

* Contained in the water as Bi-carbonate.

When the water is drank fresh from the spring, by one unaccustomed to its use, it has a bitter, saline taste, "*like Epsom Salts*"—is the mineral formula of expression—does not produce weight or distention of stomach, even when used freely. It is diuretic, producing commonly free, full and colorless discharges; purgative in full and repeated draughts; alterative in small doses—also increases the appetite and power of digestion.

The general scope of application is in all functional derangements of the digestive, uterine, renal, and nervous systems. It may not be used with any hopeful results for good in tuberculous and scrofulous diseases, or in organic diseases of the heart. The records of the Springs, however, present exceptions to the last rule, which we think can be explained by the effects of the water improving the tone of digestion.

We may assert with the confirmative evidence of fifty succeeding summers, and thousands of invalids from far and near, that this water has been used with remarkable efficacy in the treatment of Dyspepsia, Liver Complaint, Chronic Hepatitis, Jaundice, Torpor of Liver, and general debility following upon malarial disease; Dropsy, Diarrhœa, Dysentery, Constipation, Hemorrhoids, Uterine, Renal and Cystic diseases, Hæmaturia; Rheumatism.

For a record of many and diverse cases of disease treated at the Springs, reported in detail by Dr. M. A. Moore, we refer to the Charleston Medical Journal and Review, 1855.

The water is securely bottled at the Springs, and shipped to distant places. We are persuaded it is effective when thus used, but much more palatable and medicinal taken fresh from the Spring.

WM. T. RUSSEL, M. D.

ETIOLOGY AND PATHOLOGY OF INTERMITTENT AND REMITTENT FEVERS.

By P. A. Wilhite, M. D., Anderson, S. C.

So much has already been written on this subject that we are all more or less familiar with the various opinions and theories that have had their rise and fall, within the last two or three hundred years, respecting the origin and cause of this particular class of diseases, and the writer considers it a matter of no little importance what views we, as sanitarians, take in this very interesting and important subject, one involving unmistakably the lives of the inhabitants of many sections of our own and other lands.

In approaching this apparently exhausted field, it is not his intention to introduce anything new or original, but to assert his convictions after years of study, and careful observation; believing, that as a miner is able to exh ume from the caverns of the earth, a gem worthy to adorn an imperial brow, so the humblest of us can sometimes contribute a little to the advancement of science.

Nature's simplest laws appear mysterious until we can comprehend them, and the mystery which clouds the origin of these diseases, and the failure hitherto of every research, and of every attempt to explain it satisfactorily, must surely be owing to our misguided inquiries.

The idea of a specific poison, supposed to be generated by the decomposition of animal and vegetable matter, was advanced first, by Lancisci, and has been generally embraced since; but the existence of such a poison, appears to me, to be entirely imaginary—hypothetical—a creation of our own fancy, and very naturally so too, considering the different views taken of it by authors, and the Proteus-like appearance it assumes in their hands.

Thus, one describes it as "being entirely disarmed by passing over eight hundred yards of water," another, that "it can safely perform the voyage from Holland to Scotland," a dis-

tance of not less than four hundred miles, and another, "that it cannot ascend to the second story of a house, yet it can seize its victim on a mountain side, four hundred feet high." A mysterious nature indeed, suited to any circumstancés, and governed by none. "Stygian-like it ascends from the bowels of the earth, and angel-like descends with the dews from Heaven."

Periodic fevers cannot prevail without being called into existence by some agent, and as the writer is an unbeliever in the existence of this specific poison, he would suggest for consideration another agent which is not new, however, but which he believes to be all sufficient to produce these diseases. This agent, I have long been convinced is the change of temperature which takes place between midday and midnight, however slight the change may be.

Let me mention the circumstances of the epidemic in my own county in 1873.

Now, in the upper and middle portion of this State, and most of the Gulf States, the country is generally broken and undulating, abounding in numerous water-courses, many of which afford a large area of swamp, or bottom land, composed of vegetable mold, alluvial soil, etc., and so thickly covered with trash and an undergrowth of vegetation that the rays of the sun seldom reach the earth's surface.

Near these ponds and marshes are the principal localities where our summer diseases, and the so-called "malarious" fevers, in their severest forms, generally make their appearance.

In 1873 we had a fearful epidemic, and the chief sufferers were those living on or near the streams above cited.

On one of these streams was a large mill-pond, which had been erected more than forty years, and the neighborhood had always been considered healthy, but in the course of time the pond and creek for several miles above became filled with sand and mud, rendering the land on either side too wet for cultivation; consequently, the atmosphere was continually saturated with moisture, and many cases of intermittent and remittent fever followed.

Inhabitants living near other streams shared the same fate. On one small stream there were, within the distance of five or six miles, one hundred and fifty cases of intermittent and remittent fever; but on or near another stream two miles distant from the latter, and running parallel with it, larger than either of those referred to, and having as much or more marsh and vegetable matter to decompose—the swamp for miles abounding in alluvial soil, &c., there were for ten or twelve miles, but few cases of fever or dysentery.

This state of facts we often find to exist in many sections of our Southern States, one neighborhood suffering severely from intermittents, while another, close by, suffers but little.

It is the opinion of the writer that this mystery might probably be explained by extending our investigations into those localities with our thermometer and hygrometer, testing the degree of moisture in the atmosphere, no doubt finding the driest, although having the same degree of temperature, to present the least number of cases.

And again, we often see when a number of persons are more or less exposed in one of these localities, some will have an attack of remittent, others intermittent, and some escape entirely. Why is this? Why does not every one occupying and sleeping in the same building, or living in the same locality during one of these fever epidemics, have an attack of fever?

The writer will attempt to answer this question in a way that occurs to him to be the easiest and most natural.

We are continually exposed to injurious influences which have a tendency to interrupt and destroy, and were it not for our power of restricting them, life would, indeed, be short in its duration, and constantly harassed by disease. This capability of resistance residing in the system, ranging in degree in different individuals, I think tends to explain why some are exempt and others are attacked when exposed under similar circumstances.

For instance, we often see that a slight wound, or the mere prick of a needle, will in one individual cause great pain and constitutional irritation, in another syncope, in a third convul-

sion or tetanus, and in a fourth, scarcely any perceptible consequences at all.

The writer also believes that there is a natural or constitutional predisposition to disease in some individuals wholly independent of accidental causes or mere casual debility. Now let us examine into the circumstances and pathological conditions of the system thus rendered so peculiarly susceptible to this change of temperature, or external influences.

The inhabitants living near these streams, swamps or marshes, are subject to a higher degree of heat during the day and a lower degree during the night, than those living on more elevated or dryer situations.

There are several reasons for the difference in degrees of temperature in the two localities. Water, alluvial soil, etc., being poor conductors of heat, reflect the rays of the sun, thus causing a higher degree of temperature through the day, and as soon as the heat of sun is withdrawn, these soils being colder, chill the surrounding atmosphere, causing a greater reduction of temperatare at night ; but in localities where the face of the country is more elevated or undulating, the air is dryer, and more or less in circulation, keeping the temperature more uniform and lower during the day, and the soils, being generally argillaceous, and good conductors of heat, absorb a considerable portion of it, which by radiation after nightfall, favors a higher degree of temperature. Heat acts as a stimulant; and exposed to the high degree of temperature near swamps and water-courses during the day, for any length of time, the skin becomes unduly stimulated and from the sympathetic relation existing between it and the liver, the latter becomes unduly stimulated also, thus predisposing the liver to be easily and injuriously affected by external influence, particularly a slight or sudden reduction of temperature. This sympathetic relation between the functions of the skin, liver, stomach and lungs, is universally admitted, but the exact relation, however, still remains a question of dispute. Watson's Practice, page 48, says (and I believe most writers corroborate this statement) :

"It appears that a high, but not extreme atmospheric temperature has a stimulating effect upon the organic functions of the body." Thus it is easy to understand why the diseases resulting from such exposure, under like circumstances, should be derangement of the hepatic functions, spleen, stomach and bowels, with a copious discharge of vitiated and acrid bile, and often inflammation of the liver itself. The liver and lungs are the great decarbonizing organs of the body, the activity of one acting inversely to *the* activity of the other, hence there is more demand on the lungs and less on the liver in cold weather, and vice versa in the heat of summer.

"In the lungs carbon undergoes slow combustion, accompanied by a disengagement of heat for keeping up the animal temperature, and is thrown off as carbonic acid. In the liver, it unites with hydrogen and small portions of oxygen, and nitrogen, and forms bile."

The atmosphere, on account of its rarity, contains less oxygen, in the same volume, in summer than in winter, hence there will be more labor thrown on the liver. "For the performance of this, in accordance with the general law of secretions, increased activity of the circulation through the portal system will be required. Of this activity, all the radicles of the large veins that unite to form the vena portæ, must, more or less, partake."

From the enlarged spleen, produced by, or often seen in, intermittents of long standing, we have reason to infer that in slight congestions, the splenetic vein is the one chiefly involved, and "whatever gorges the splenic vein, must also gorge its tributary—the inferior mesentery which carries the blood from the rectum and descending colon."

On account of the congestion of the mucus membrane inflamation is easily lighted up from exposure, or a slight reduction of temperature, and we have a case of dysentery.

The skin, by its two-fold action, respiratory and secretory, moderates the temperature of the body, and assists the liver in accomplishing its increased labor.

Now from an exhausted condition of the skin, and a stimulated condition of the liver, from a continued high tempera-

ture, let us see what will be the effect of a reductiou of temperature, particularly when accompanied by moisture, or during rest and sleep.

Having been exposed to this high temperature during the day, we generally go to sleep having very little or no covering to protect us from the humid and cool night air. The skin, from its recent activity during the day, is rendered peculiarly sensitive to this slight reduction of temperature, and more especially when accompanied with humidity; the result is, the pores of the skin are closed, the surface becomes more or less cool, the blood recedes from the circumference and finds its way to some of the internal organs, and as the liver has been rendered the most susceptible, a great portion of it will be invited to that organ, producing temporary congestion.

If the excitement and reaction have been slight no ill result may follow, as the tonicity of the system will be regained by rest and sleep. The liver, however, may not be sufficiently restored to expel the congesting fluid entirely, and parts of it will remain in a state of partial congestion.

This, according to the degree to which it exists, may or may not interfere perceptibly with the functions of the organ.

But if the exposure be sufficiently great, and often repeated, the patient may have an attack of acute bilious fever. Every exposure increases the hepatic derangement and weakens the tonicity of the organ, until at last, during one of these periodic determinations of blood to the part above explained, it gives way, and the circulating fluid "receding from the surface, collects in the liver, spleen and portal vessels, in abnormal quantities, and we have the phenomenon of a chill.

The blood here soon acts as an irritant, reaction takes place, tonicity returns with excitement, and we have fever."

If the congestion be not sufficiently intense to excite inflammation the fever after a while passes off, and the patient has an intermittent, But if inflammation has been excited, or the irritation caused by the congestion continue, the fever only abates after a period of excitement, and the patient has a remittent; and owing to the sympathetic relation existing be-

tween the liver and other organs of the body, the stomach, spleen, and large and small intestines, we understand how easily any of them may be involved in course of the disease, the various degrees of malignancy depending on the modification of the cause.

When I was a student of medicine in Charleston, thirty years ago, the citizens advised and instructed that if they should go into the country and sleep for one night on the rice plantations, or any part of that low flat country, they would most certainly contract what was called country fever, but if they would sit up and not sleep, the danger was greatly lessened. That theory I believed to be correct then, and I believe it to be correct now, and that the first impressions or commencement of this class of disease generally takes place while we are asleep. Why do intermittents and remittents appear more frequently near water courses, and on low, flat sandy soil, and as we often see, on the lee-ward side of a stream, and but seldom on the windward?

It is the generally received opinion of writers on "malaria" that miasm is carried by the wind from one side of the stream to the other; now may it not be the humid atmosphere that is wafted from one shore to the other, instead of "malaria."

We often see in health-reports of cites and large towns, that the largest number of cases of intermittent and remittent fever appear in the suburbs of such towns or cities.

This fact may be accounted for in this way; in the centre or business portions of towns and cities the streets and sidewalks ase generally paved with stone or bricks; this stone or brick being exposed to the rays of the sun during the day, absorbs a considerable amount of heat, which by radiation after nightfall, prevents, to a degree, the lowering of the temperature.

On the other hand the streets and sidewalks in the suburbs' are not, as a general rule, paved, and the soil, being a poor conductor of heat, absorbs but little during the day, and therefore will have but little to give to the atmosphere after night. In such localities we infer that the temperature will be lower at midnight, with an atmosphere more highly charged with

humidity, than in the centre or paved portions of such towns. And again, we have seen it stated that those sleeping in the first story of a building may have remittent fever, those in the second intermittent, while those in the third or fourth escape altogether. "Malaria" is too heavy to ascend unaided, but remains near the surface, unless carried up by wind or moisture.

Now it appears to me, that this same moisture, which is supposed to be the vehicle by which this "malaria" is conveyed up into the atmosphere, is sufficient, by reducing the temperature within itself, to do what is attributed to malarial poison.

We all agree that the nearer the earth's surface, the greater the humidity, and as we ascend, the purer and dryer the atmosphere becomes.

In a recent city health report of St. Louis, the city chemist, among various other facts relating to public health, said, "he had examined the condition of brick walls in buildings standing in dry and damp situations." First, taking bricks in dry weather from an old and strong building, placed on high ground, well sewered and exposed to sunshine—a face brick next above the foundation contained one ounce of water; four feet higher, half an ounce; and just under the level of the roof, one-twelfth of an ounce.

And in examining a building differently situated, notoriously damp and unwholesome, on high but made ground, a face brick in the fourth row from the foundation contained eighteen ounces of water."

These facts should be well considered by sanitarians when investigating the causes of this class of diseases.

A temperature that would be perfectly harmless to vegetation when the air and plant are both dry, will produce a frost after a rain, and when the air is moist. Of this fact every farmer can testify.

The difference in respect to night temperature between places near, and those remote from streams of water or swamps, is further shown by what takes place on the occurrence of the late frosts of spring, and the early frosts of fall.

Near the streams they are always more severe than at a distance, so that plants in the former situations are often killed, while in the latter, they escape unhurt. The human system is similarly affected.

It does appear conclusive to me, that this humid atmosphere, surrounding the sleeping occupants of lower stories and all damp situations, is sufficient within itself to produce the diseases in question, without being a mere vehicle for conveying "malaria."

We can also understand how indiscretion in diet, and the depressing passions, fear, grief, &c., aid in producing this disease. "Congestion of the portal system is liable to occur when the alimentary canal is distended with food.

The depressing and perturbing passions, as fear, grief and anxiety, cause the blood to recede from the surface as is shown by the ashy paleness which they always produce."

Over indulgence in rich food containing much fatty matter, likewise predisposes to these fevers. Indulgence in rich animal diet in warm weather, when there is so little need for the consumption of carbon for keeping up the temperature of the body will have the effect of throwing more labour on the liver.

It will be stimulated, and as a consequence rendered more susceptible to the influence of the diurnal changes of temperature. A vegetable diet on the other hand, contains comparatively little carbon, while it is rich in protein, the proximate element of all the tissues. In the warm season it will obviously be more conducive to health than the other.

If this theory be correct, what should be our preventive means or measures to lessen our chances of, or to escape these fevers? To avoid the exposure to the heat of the sun by day, and the chilling and humid atmosphere at night, and other extremes of temperature.

This idea seems to have been taught as far back as the days of Pliny, and we could show from history where it had been acted on, in many instances, with great benefit.

It is stated that Bonaparte, when passing through those pestiferous swamps of Italy, to protect his troops from fever had fires built before each tent, which was to dry the atmos-

phere, and instructed every man to dress in flannel under-clothing at sun-down, and to take the same off at sun-rise.

If a stranger goes into a neighborhood where fevers are prevalent, and asks what means he must take to escape it, he will almost invariably be told by every one, to avoid the hot sun by day, and the cool damp air at night, not to expose himself after sun-set, nor before the sun has risen high enough to dispel the chilliness of the morning air, or, if he has to expose himself at the dangerous hours, to see to it that he is properly protected by additional clothing, and have fires made up in his bed-chamber on retiring, The writer confidently believes that any one might live in any locality in any of the Southern States with impunity, by using the above precautions, with addition of dressing in flannel underclothing at sun down, and taking them off at sun-rise.

Is not the partial exemption of the negro from these diseases another proof of the non-existence of this malarial poison? That the negro is less liable to attacks of these fevers, than the white man, when equally exposed, is a fact we all concede, yet I have never seen a satisfactory explanation of this from any writer on "malaria."

Now in accordance with the theory advanced in this paper, the writer believes that the partial exemption of the negro can be easily explained.

His skin is black, and this radiates the absorbed heat so rapidly, that the organic functions of the body are not stimulated to the degree that the white man is; consequently, he is not susceptible to the slight changes of temperature, and therefore requires more frequent, and more severe exposure, to affect him.

Another interesting fact connected with these diseases is that they are arrested by a heavy frost.

In accordance with the theory here entertained, the writer believes that the reason why this is so, is, that fires are now made up night and morning, and winter clothing is put on.

All these co-operating prevent that internal congestion from which the disease takes its origin.

A frost not heavy enough to make the inhabitants thus act on the defensive never arrests the disease.

All writers on this subject, as well as the residents of these districts where it prevails, agree on this point.

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ON THE EPIDEMIC OF RÖTHELN—OF 1881, AS IT PREVAILED IN THE CITY OF CHARLESTON, S. C.

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During the latter part of 1879, a few cases of a peculiar eruptive disease, unknown, at least as an epidemic, in Charleston, occurred in this city, and extended into the spring and the summer months of 1880. At the December meeting of the Medical Society of South Carolina, a member reported some cases which he had seen during the preceding month, which he designated as Rötheln. In February 1880, several gentlemen reported like cases under the name Febrile Roseola, or German Measles. In May of the same year, some discussions upon the disease took place; two forms of eruption were spoken of, one coming on in large splotches, while the other was acuminated. It differed somewhat from the measles, in the time of the eruption, the course of the latter being regular; the eruption appearing after a definite period, while the so called "German Measles" was irregular. The epidemic gradually wore itself out during the summer months. Some few cases extending into the fall. There was a diversity of opinion at first among the profession regarding the nature of the epidemic, or rather how it should be scientifically designated.

Many members of the Society were disposed to regard it as a modified form of measles only; others as anomalous scarlatina, some as roseola, others again as rotheln. Each physician after attending a few cases, recognized it as a disease which he had seen sporadic cases of before, but never as an epidemic; its scientific position among the exanthemata was difficult to determine. As the cases multiplied the people generally got to speak of it as German Measles and the profession settled upon the term Rötheln or Roetheln. Some continue to speak of it as Febrile Roseola, as Niemeyer calls it, It was very mild and slightly contagious, the eruption resembling measles in some respects; scarlet fever in others, slightly elevated above the surface, and mostly in patches, sometimes however, the patches were so close together as to present the continuous appearance of the rash of scarlatina. The color had not the dusky hue of measles, but that of the vividness of scarlet fever; the face was almost invariably covered, and in most cases the body and limbs. The eruption stage generally lasted three days, but there were exceptions, as sometimes it was out but a few hours, and then again for four or five days. Its disappearance was gradual, desquamation was not observed in any case, that I heard of; some of the children complained of intense itching during the disappearance of the rash

The age of the majority of those who had the disease, varied from eighteen months to twelve years, yet it was not confined to children alone. The fever was high at first, ushered in with a sense of malaise, occasionally with vomiting. Almost all suffered from head-ache, particularly in the frontal region and in the eyes, which light intensified. The mucous membranes—as in most of the exanthemata—were affected, but not profoundly; there was sneezing in the early portion of the disease, with a thin discharge from the nose; then cough, huskiness of the voice and hoarseness, both of voice and cough—in some cases diarrhœa. In some cases hemorrages came from the nose and mouth, and if I remember correctly, from the eyes and ears in two cases. In some of the severe cases, there were sore throat, and the glands of the

neck were swollen. No enlargement was noticed in the sub-occipital and submaxillary glands, which, according to Dr. Dyce Duckworth, is characteristic.—(Lancet.)

The sore throat did not run on into ulceration, neither did the glands suppurate. The tongue presented the strawberry appearance of the measles, with a thin white fur, though red papulæ projected through this. In a few cases the urine was examined; in these no albumen was found, nor was the amount of urine diminished, although somewhat darkened in appearance and more pronounced in the smell.

The temperature ran up to 102° and 103° during the first twenty-four hours generally; persisted near this for about forty-eight hours perhaps, and then gradually declined to the normal, or sank a degree or two below it. The convalesence was extremely rapid, and no sequelae followed. So benign was the attack, that mothers soon learned that it was devoid of danger, and ceased to send for their physicians. I did not hear of a single death recorded.

In the epidemic described by Dr. E. H. Sholl, of Gainsville, Ala., 1881, which occurred in Sumter County of that State, the disease differed somewhat from what was seen here. Desquamation was a constant symptom. Sore throat was in all the cases seen, some mild, some severe; the duration of this was well marked and defined, and was ten days; from which time it gradually disappeared, but could be seen at any time for twenty days thereafter, when the body was relaxed by vigorous exercise on a hot day. This applied to the severer cases. "About the twelfth day from the appearance of the eruption, desquamation began, and continued for forty-eight days, at the end of which time, the last peeling from the hand took place. From the throat and on portions of the face, the sheddings was branny scales and rolls. From the hands the process went on slowly by a literal peeling, the inner part of the hand, whenever commonly subjected to pressure, turning a deep saffron yellow prior to the beginning of the shedding. On the soles of the feet, the peeling was confined to the toes, the rest of the foot shedding itself in scales,"

It is thus seen, that the epidemic in Sumter County, Ala.,

was more severe than that of Charleston, resembling much more Scarlatina in character, from the milder cases of which, from the description given of it, it is difficult to distinguish it.

THE TEETH.

BY THOMAS T. MOORE, D. D. S., COLUMBIA, S. C.

With our limited time and space, we will endeavor to lay before the public in as concise a manner as possible some information regarding the devolopment, eruption, (cutting) and care of the teeth, and their influence upon the general health.

In the first place, we will venture the assertion that a perfect set of teeth will add to the possessor many years. of life, and this alone should induce the utmost care in their preservation, and doubtless would, but for the lack of information as to the importance of timely attention to prevent decay, arresting the destruction, when disease is discovered, and of artificial restoration when lost. In addition to health, the value of teeth in enunciation (distinctness of speech), preserving the symmetry of expression and comeliness of features, cannot be over estimated.

Nature has alloted to mankind two distinct sets of teeth. The first, known as temporary, deciduous, or milk teeth, consist of ten teeth in each jaw, making twenty in all. These teeth begin to form in fœtal life (seventh week) and increase in size and density, until at birth the forms of the crowns, (that is that part of the tooth which protrudes through the gums) are fully developed, and the roots partially formed. They, as we have before mentioned, consist of ten in each jaw, and are known by the following names: Upper set, two central incisors—those immediately in front, and one on each side of these, called lateral incisors; one caume, or eye tooth on each side of the laterals, and four molars, two on each side, in rear of the eye teeth, and they are erupted, (cut) in the following

manner, or nearly so, there being no positive law as to the time or order of their appearance.

Two central incisors, between 5th and 8th month.

Two lateral incisors, between 7th and 10th month.

Two canine (eye teeth) between 12th and 16th month.

Two first molars, between 16th and 20th month.

Two second molars, between 20th and 36th month.

The lower set are the same in name and number, and are usually cut in the order in which they are named above, a few weeks earlier than those of the upper jaw.

Now mark well, that between the fifth and the seventh year the child cuts *four large molar* (jaw) *teeth*, two above and two below, one on either side, in rear of the temporary set above described. These are the first permanent teeth that show their crowns above the gum, and parents in a large majority of cases mistake them for temporary teeth, and they are frequently allowed to decay beyond remedy, under the erroneous impression that the child will shed them. Now these teeth are of the utmost importance—nature sends them forth about the time the child begins to shed its temporary set, to enable it to masticate its food properly while it is losing its first set, and to act as a stay or brace in preserving the integrity of the arch and compelling the ten permanent teeth to occupy the space vacated to them by their predecesssors, and not encroach upon the room intended for the second and third molars (wisdom teeth).

From peculiar influences exerted upon these teeth, the tender age at which they appear, the deep fissures, with imperfect union of the enanel edges, and many other causes, to which they are subjected, render them especially liable to decay, and they are often decayed before they have fully emerged from the gum.

Parents should carefully note the number of teeth in the childs mouth, between the age of five and seven years; beginning with the central incisor, count five on each side; when six teeth are discovered, care must be taken to preserve the sixth, as that is the first permanent tooth, and it is of the utmost importance until the child is twelve or fourteen years

of age, at which time it will cut another molar called the twelfth year or second molar, and if the first or sixth year molar is to be lost, this is the proper period of life for the loss to occur. The germs of the second or permanent set of teeth are in the jaws, and the work of moulding them into proper shape and density for use in adult life is begun long before the birth of the child, and while the temporary teeth are erupting, (being cut) the permanent are in various stages of development.

By a process called absorption, the roots of the temporary teeth are slowly removed, until having no support they drop out, and thus make room for their successors; a perfectly formed and well taken care of set of teeth in a healthy child will loose their hold by absorption and drop out as white and clean as pearls.

The second or permanent set of teeth, consists of thirty-two, including the sixth year molar referred to above, sixteen in each jaw and one in pairs—eight in each side. In addition to the sixth year molar, this set contains eight bicuspids, and four wisdom teeth, that are not found in the temporary set. They are *usually* erupted as follows.

2 Central incisors between 6th and 8th years.
2 Lateral incisors between 7th and 9th years.
2 Canines (eye teeth) between 11th and 13th year.
2 1st Bicuspids between 9th and 10th years.
2 2nd Bicuspids between 10th and 11th years.
2 1st Molar (sixth year) between 5th and 7th year.
2 2nd Molar between 12th and 14th year.
2 3d Molar (wisdom teeth) between 17th and 45th year.

The care of parents should be earnestly directed to the proper cleaning of the teeth during the tender years of childhood; it should be made a daily duty to see that no food or other extraneous matter is allowed to remain about the teeth, and it is important to consult a competent and skillful dentist at least two or three times a year, in order that the temporary teeth may be properly attended to, and not lost at too early an age, nor be allowed to remain too long, thus causing irregularity in the permanent set, and he should be requested to note well,

and stop decay in its earliest stages, thus assisting nature to resist the ravages of disease, until the enamel becomes hard and dense enough to battle successfully with the enemy, which power is not reached for many years after the tooth is erupted. Indeed so carefully should the habit of brushing the teeth be inculcated, that *the first toy* of the child should be a *tooth brush*, and *its first lesson*, how to *use it*.

We have endeavored to show how the teeth are developed and erupted; now let us consider the best mode of preserving them and their influence upon the general health.

There are many causes for the loss of the teeth, but we can only recount the most prominent. Decay, or caries, causes the destruction of by far the greatest number; and to the question, what causes decay? we will answer, there are two predisposing and exciting causes; by predisposing cause, we mean their imperfect structure, mechanical injuries, irregularity, the lack of proper nourishment before birth, and during infancy, owing perhaps to the ill health of the mother during gestation, or to some derangement of the child during the period in which the teeth are forming, or to improper diet of both mother and child, of which we will speak more fully hereafter. Mechanical causes—such as blows, falls, cracking nuts, biting threads, &c., causing the enamel to shell or crack, thus predisposing to decay,

Irregularity of the teeth predisposes them to decay on account of the great difficulty in removing particles of food from between them, and the almost impossibility of keeping them clean, and from their lapping condition, a large portion of the tooth is exposed to the balefnl influence of decomposing matter, and at points are little able to resist it.

The exciting cause of decay is principally the fermentation and decomposition of small particles of food lodged around and adhering to the teeth. This is by far the most fruitful source of decay, as every one knows that particles of meat, fatty substance, &c., exposed to a temperature equal to our summer day, will soon become decayed and putrid. Now the mouth is just about of the temperature indicated all the time while in repose, and being constantly moist, very favor-

able conditions exist for the decomposition of food, which decomposition acts upon the lime salts, of which the tooth is formed and destroys it piece by piece.

Other exciting causes are different forms of chemical action, which may be either from the use of acids as food or medicine, or may be, vitiated secretions, saliva, or mucus, which vitiation may be the result of general systemic derangement; or local causes, such as tartar around the teeth, the use of improper powder and washes, mumps, sore throat, etc., etc. Decay is not the only enemy to teeth, many are lost by the wasting away of the socket which holds them in position. This is caused in a majority of cases by neglect in thoroughly cleansing the teeth, thus permitting the accumulation of tartar.

Habitual smokers who neglect their teeth are much troubled with this disease, and while it may not prove so in every instance, daily and skillful use of the brush, and an occasional visit to the dentist will in almost all cases prevent material injury from this cause.

The liability to decay varies in different individuals, and certain teeth in the same mouth are more vulnerable owing to some systemic derangement during the period of development. Another predisposing cause to decay arises from hereditary transmission of imperfectly made or defective teeth. In our own practice occur a number of instances where we can trace a missing or defective tooth from parent to child for several generations, and whole families are marked by some peculiarity of the teeth.

PREVENTION OF DECAY.

All tissues of the body are nourished by the blood, and upon its purity and richness depends the development of the entire system. Since the blood has no self-making or self-sustaining power it is evident that these qualities must be imparted to it, and this supply, to be constantly renewed, must come in the shape of food; but all food is not equally nutritious, nor does each tissue require the same food. The muscles, nerve, brain, bone and teeth each take from the blood those qualities which are best adapted to its own wants. The teeth and bones

require certain earthy matter which is abundantly contained in some articles of diet, and are entirely wanting in others. As we have already said, the various tissues of the body are dependent for their growth and development upon food taken and assimilated. Certain kinds of food furnish fat, produce heat, or supply muscle, brain, nerve, bone and teeth material, and it is plain that food, lacking these elements, will not sustain the body in a healthy condition. It is therefore evident, since healthy tissues depend upon the quality and, in some degree, upon the quantity of food, that if the mother, during pregnancy, is improperly supplied with tooth and bone-making diet, the child will assuredly have defective teeth, and the same is true of the nursing-mother, for we have seen that the teeth begin to form at the seventh week of fœtal life, and at birth not only the temporary but the permanent set are in an active state of development, and depend almost entirely upon the diet of the mother for their support, and in the absence of suitable diet she herself does not escape unharmed, for it is susceptible of proof that where she has not taken proper food, and in sufficient quantity to supply both her child and herself, that her own teeth suffer in consequence, and it is believed that absorption takes place to meet the deficiency in those of her child; and the saying, "For every child a tooth," has become a truism—the truth of which can be found in the mouth of nearly every mother in the land. Nor is the necessity for proper food confined to the period of development, but extends through the greater part of life, and especially should children with defective teeth be dieted until they have passed the age of maturity.

For infants the only true and proper diet is that supplied from the breast of the healthy mother or nurse. The mother cannot bestow too much care and attention upon her own teeth, nor can she be too careful of her diet until she has weaned her child. In the absence of the breast no food so well supplies all the elements and material for the growth of the various tissues, nor is so well suited to the digestive organs of the child as good fresh cow's milk, and this should be its exclusive diet until it has attained the age of one year,

and its principal diet until the third or fourth year. At the age of one year the secretion of saliva begins to assist in digestion, and the child's diet may be varied by the addition of cracked wheat, or oat meal cooked to a jelly and eaten with milk. At the age of three or four years milk should still be the principal diet, but may be supplemented by the articles named, together with barley flour, rice farina, sago, yolk of eggs, chicken broth, etc., etc.; bread and butter, baked potatoes, and ripe fruit.

Articles of food, such as arrow root, corn starch, and other farinaceous food, are positively *injurious* to *infants* under *two and a half years of age*, and, together with pastry, confectionery, cabbage, turnips and like articles should be carefully excluded from their dietary.

The whole grain of the wheat is perhaps richer in bone and tooth-making material than any other single article of diet; next in order is the whole grain of oats.

Garretson, in his "Oral Diseases," says: Aliment containing the inorganic, or earthy constituents, on which depends strength of frame, from which are formed the bones and teeth of the individual are contained in milk, eggs, animal food, and particularly in wheat, rye, oats, potatoes," etc., etc. These conclusions we may accept as correct, and the reader should be impressed with the fact that while the *whole grain* of the wheat is very nutritious, *fine* or *white flour* made from wheat contains almost no bone or tooth-making element. Professor Johnston's analysis of one thousand pounds of whole grain of wheat as compared with a like weight of fine flour, is as follows:

	WHOLE GRAIN.	FINE FLOUR.
Of muscular matter	156 lbs.	130 lbs.
Of bone and tooth matter	170 "	60 "
Of fat	28 "	20 "
Totals	354 "	210 "

Thus it will be seen that the *whole* grain of wheat is *one-half more nutritious* than *fine flour*, as it also shows the very

great proportion of *bone-making* material contained in the *whole grain* or *bran*—no less than 700 out of 1000 parts, or a little more than two-thirds of the whole.

But while we have seen that the whole grain of the wheat contains the greatest amount of tooth and bone-making material, we do not doubt that more good can be accomplished by the use of oat meal porridge and milk, on account of its being more palatable and longer relished than similar diet of cracked wheat or bread made of unbolted flour.

While wheat, oats, and rye abound in the desired material, Indian corn contains none of the elements that enter into tooth structure, or only a trace, that is *" only *one sixth of one part in one hundred*," but abounds in fat and heat-making material. and should be avoided as a diet.

In regard to the health of the mouth and teeth, we quote from that excellent work, "The Mouth and the Teeth," by Dr. J. W. White, which should be read by all:

"The mouth is not only the most expressive and charac-
"teristic, but it is also the most important of all the features;
"No other portion of the human organism is of such complex
"structure, and no other has such diversified functions to per-
"form. * * * The mouth is the organ of speech, of
"taste, of song, of mastication, of insalivation, the avenue for
"the entrance of food and drink essential to life, and the chan-
"nel through which passes much of the air which is inhaled
"as well as that which is expired. The same membrane
"which lines its cavity is continued throughout the nose, the
"throat, the stomach and the intestinal canal, throughout
"the larynx, the wind-pipe, the bronchial tubes, and the lungs.
"It is thus closely related to the functions of digestion and
"respiration, while by open air passages direct communica-
"tion is maintained with the eyes, ears and nose, and by nerves,
"with which it is abundantly supplied, with every part of the
"body."

Thús it will be seen how very closely the mouth and teeth are connected with all parts of the human economy, and how

*Saulsbury's Prize Essay.

essential to the general well-being is their healthy condition.

The pleasure and comfort derived from a clean, healthy mouth, pure breath, and wholesome saliva; the advantage of the teeth in enunciation; the exemption from pain and suffering caused by these organs when diseased, and above all, the preservation of the general health by perfect mastication and insalivation of the food, would seem to us sufficient inducement to incite us to extraordinary and unremitting care to secure and preserve these results; and it is here impressed, that unless we are able to *properly masticate* and *thoroughly insalivate* our food, we cannot live our allotted three score and ten years; for unless the mouth and teeth are in a proper condition to perform these functions, an extra task is imposed upon the stomach which it is unable long to perform. Apart from these considerations, it is a duty which we owe to society to keep a clean and healthy mouth, with teeth and breath void of offense. All these results may be accomplished by careful use of the brush—not harsh scrubbing, but a judicious and skillful use of that instrument. It should be the endeavor to *clean* the teeth—that is, to remove all extraneous matter from around and between them. We can best accomplish this by forcing the hairs of the brush between the teeth, and by brushing the upper teeth downward and the lower upward, and with the assistance of a silk-thread and a tooth-pick of quill or wood, remove all particles from between them.

Where the teeth are irregular, and certain of them cannot be reached with the ordinary brush, a piece of soft wood, shaped to suit the case, and charged with some reliable tooth-powder, will be found very efficient.

In the use of tooth-powders be careful to avoid nostrums made in ignorance of the action which their ingredients will produce upon the teeth, and wholly unsuited for the purpose for which they are recommended. A tooth-powder, in the majority of cases, should be slightly alkaline; should be soluble in the mouth, and at the same time should contain sufficient friction matter to remove any slight discoloration or soft tartar from the teeth; carefully avoid the habitual use of

astringent mouth-washes, and use only such as are prescribed by a competent practitioner.

By closely adhering to the foregoing, and visiting your dentist at least twice each year, there is little doubt that the teeth can be preserved to a good old age, and with them so much of health as depends upon the functions performed by them.

DRAINAGE, FOR HEALTH AND PROFIT, IN YORK COUNTY.

Mr. President and Gentlemen :

Now that the system of Quarantine Regulations for the City of Charleston has been satisfactorily arranged between the municipal authorities of said city and the State Board of Health, and that the proper officials by appointment of said Board, have entered upon the discharge of their respective duties ; now that necessary care and caution have been displayed in the diffusion of vaccine virus among the physicians of each county in the State, and by them skillfully and successfully applied in their respective fields of labor, that "the bill to declare what shall be considered nuisances injurious to health," "to adopt a system to regulate the registration of marriages, births and deaths," "to regulate the licensing of physicians and surgeons," have had a favorable consideration by one branch of the General Assembly, and bids fair to be passed by that body into statute laws at its next session, the State Board of Health have reason to congratulate themselves on the successful result of their past labors and the cheering, encouraging prospects which await them in the future. At this time and at this station of their successful progress, it is but natural that they should stop and enquire what remains to be done ?

The field of labor before us in still wide and extended, much work in that field is still intact, and it is to be hoped and devoutly wished that the results of our labors in that field will ultimately be crowned with success.

Among the many subjects in that field which should claim our earnest attention and consideration, none are of more interest and vital importance than that of "*County* drainage."

From the beneficial effects arising from the proper application and development of county drainage it involves the interest and prosperity of all the people of the State, of every grade and class.

It rekindles, reanimates the fires of the patriot, who loves to see his country prosperous and happy; it appeals to the true philanthropist, who is ever ready to extend the hand of charity and benevolence to his fellow man; it at once attracts the attention, excites the admiration and laudable ambition of the medical scientist, whose every thought, word and action are most cheerfully devoted to every means, plan and purpose calculated to improve and advance the general welfare, happiness and prosperity of the community in which he moves, as well as of the State at large.

Among the very worthy trinity here alluded to, none occupy a higher, holier, nobler status than the medical scientist, the intelligent, skillful, scientific practitioner of medicine. He alone devotes all his thoughts, cares and anxieties, his time and labor, to the well being of those confiding in his skill as a physician, and in his honor as a gentleman. By night and by day, in heat or cold, in wet or dry weather, he holds himself in readiness to obey their calls during their afflictions, in many cases without a cent of compensation and much less gratitude, often falling a victim to the labors of his profession, leaving his family homeless and penniless, he sinks into his grave with much "post mortem praise" bestowed upon him, but scarcely enough of this world's means to wrap his body in a winding sheet, and return it to its mother earth.

At this day we see the medical profession of this State leaving their homes and their daily lucrative practice, meeting together to devise means and plans, not to advance their own selfish interests, but to obtain healthy, mental and physical enjoyment for the whole people, and it is from this source that this idea of county drainage arises.

I regret that short time, and the want of a proper source from which to derive satisfactory information or data, upon which to base this humble, tho' earnest report, renders it rather difficult for me to make the same correct and precise in all the details relative to the subject as the importance of the same demands. Having no county maps of sufficient accuracy to learn the length and breadth of the creeks within the limits of York county, (I do not write of other counties, because I have not the record of them, from which to report,) I have been compelled to rely upon my own knowledge of these creeks or rivulets, supported by the information derived from those who have lived upon or traversed the same from their origin to their termination in the rivers bounding the country on the east and west.

From information so obtained, and which I consider sufficiently exact for our purpose, I am enabled to report:

That there are two hundred and twenty eight miles of creeks or rivulets in this county requiring draining, seven of these creeks lie on the west and north west of the county, passing through an undulating country; twelve lie on the eastern and southern side of the county, passing through flat lands, slightly undulating. These nineteen creeks average twelve miles in length, the maximum being twenty four miles, and the minimum five miles. The average breadth of the bottom along the same is about one sixth of a mile, or two hundred and ninety yards. The number of square miles of these flat or bottom lands along these creeks is forty two, and the number of acres twenty six thousand eight hundred and eighty (26,880).

Now if we estimate forty bushels of corn per acre, which is considered a low estimate for such character of land, we will have from the 26,880 acres, (to be reclaimed by drainage) the very satisfactory amount of 1,075.200 bushels of solid corn, which at $1.25 per bushel at this time, would place in the possession of our people the attractive little amount of $1,294 000. The above number of bushels of corn distributed among the people next spring will confer untold blessings

among hundreds of families, who now dread that approaching season.

The population of York County as per last census is 30,000; Now, allowing annually 13 bushels per capita, and we have the number of 390,000 bushels of corn, with which to bread the people of York county. If this amount be distributed from 1,075,200, which could be easily produced on these bottom lands, when thoroughly drained, we will have a clear surplus of 685,200 bushels of corn, which at $1.25 per bushel would give the neat sum of $856,500 and if the amount so produced were equally divided among the people of York County to day, it would not only pay their whole debt, but also make them independent *corn princes*, bidding defiance to the smoke houses and corn cribs in Ohio and Missouri.

So much for the agricultural and financial benefit accruing to the people of the county from the consideration of the subject, and the practical application and development of the plans and means for perfecting the same.

But, as the increase of agricultural products and an improved sanitary condition of the county is the necessary consequence of county drainage, they can not be conveniently separated in this report without ignoring one or the other, and it is more especially the sanitary condition of the county to which it is the object of this Board to direct their attention.

The streams running through the western portion of the county, which is quite broken in surface and undulating, do not present so much flat land exposed to over-flow with consequent lakes and pools of stagnant water filled with decaying and decayed vegetable matter, as those on the eastern and southern portion of the county, and consequently we find by observation and practical experience that the people living upon, or a few miles from, said streams, do not suffer so much from malarial fumes as those on the eastern side of the county. On the eastern side of the county the bottom lands are so low and flat, and the surface so slightly undulating, that the overflows are extensive, and consequently water remains upon many hundred acres of these lands along these creeks, during the greater part of the winter and spring seasons. The con-

sequence is that we find malarial endemics existing much more extensively and presenting a more violent character than those cases on the western portion of the county, so violent that many cases of malarial fever on the eastern side prove fatal, and the convalescence of those who recover is very tedious and slow. The cause of this difference in the malignancy of these diseases in the two sections described as above depends upon the greater intensity of malarial poison and less ozone in the atmosphere of the one, than in the other.

To illustrate the virulence and fatality of malarial fevers in the Eastern side of this county I would cite the case of one family, that of Dr. White, now of this county, who informed me that his ancestors settled on Waxhaw Creek, in an adjoining county—Lancaster, a creek whose topography is the same in character as others on the Eastern side of York County; that this settlement, numbering many persons, was made in 1743, and from the baneful effects of this malarial fever his brother and himself were the only descendants left from that large settlement made long since.

The experience of the past, in this and other countries, has proven most conclusively that skillful drainage of all flat lands in a malarious section of country, with proper cultivation of the same, can alone remove the source of malaria and thus ameliorate, if not nullify, its effects. Such then being the evidence of profit and health, such the inducement and reasons for undertaking this very worthy, important and highly beneficial work, the question arises, how can this work be accomplished? It is a very trite, though true saying, that "where there is a will, there is a way." The will of the people on this subject should be expressed and declared through the Legislature by its enactments on this subject—the way is open through the prison doors of the Penitentiary where hundreds of convicts are confined and fed at the expense of the tax payers, whose labor in the completion of this grand and practically useful work could be made highly beneficial, both to local communities and the State at large.

To carry out the proposed plan submitted in this report, I

suggest that it would be advisable for this Board to appoint a Committee to memorialize the Legislature on the subject.

I close this report by saying that the malarial endemic which renders the lives of our people wretched, could be avoided by a thorough system of drainage as above recommended.

Respectfully submitted,

J. R. BRATTON, M. D.

Yorkville, S. C., Oct. 7, 1881.

HYGIENE OF THE EYE IN SCHOOL CHILDREN.

BY GEO. HOWE, JR., M. D., COLUMBIA, S. C.

It is a fact not generally known, that a large percentage of the cases of near-sightedness (myopia) are due to the over-strain of the eyes during school life. It has been shown that in those countries where children are sent early to school, and are kept at their books for many hours during the day, the greatest number of cases of near-sightedness occur. Dr. Chisolm says: "In analyzing with care the eye sight of a large number of school children, and determining the cause of near-sightedness in connection with their daily mental work, it was discovered that the idle escaped this heavy tax which bore most heavily upon the most industrious. Let us take the series of public schools in St. Petersburg, where, according to Dr. Erisman, the aggregate of the children start with thirteen per cent. of inherited myopia. He selected out of several thousand children all those who studied two hours a day outside of the school-house, and found, by examination, that among these studious little ones near-sightedness had already increased to seventeen per cent. Of those who studied four hours out of school, twenty-nine per cent. had become near-sighted; and of the most industrious, who worked at their books six hours at home, to insure perfect marks from their teachers in their competition for class prizes, over forty per cent. had injured their eyes, and needed concave glasses for distant vision."

This great increase in the proportion of near-sighted children is attributed, and directly traced to the overuse and abuse of the eyes. In the primary schools of the large American cities, the largest number of near-sighted children are of German parentage. This for the most part is inherited through several generations. It is estimated that in the schools of Germany the children begin school life with 11 per cent. of near-sightedness. The same class of American schools, with mixed, native and foreign parentage show a proportion of 3

per cent of near-sightedness. The greatest number of this 3 per cent. is German.

These statistics are alarming, and it is time that parents and teachers were made aware of this danger to the young that are under their care.

Near-sightedness is a disease of civilization. The unlearned are not liable to it, except by inheritance. It was never known among the negroes of the Southern States until they became students. It is still rare with them, but will develop as their education advances. It is more frequent in the cities than in the country.

The question arises, *why* should the use of the eyes in children for many hours daily, produce near-sightedness? To answer this question intelligently some account of the structure of the eye is necessary. The eye is a hollow organ, slightly longer in its antero-posterior diameter than in its vertical or horizontal diameters. The cavity of the organ is divided into two unequal parts by the lens. The posterior is the larger, and is occupied by the lens and a thick, transparent fluid, called the vitreous humor. The anterior portion is filled with the aqueous fluid. The walls of the eye-ball are composed anteriorily of the cornea, posteriorily and laterally, for five-sixths of its surface, of the white sclerotic coat, which is lined by the choroidal coat. The choroid, in its turn, is lined by the retina or perceptive membrane. To the globe there are attached several muscles, one above, below, and to either side. In addition to these there are two others, which serve to impart to the ball oblique movements.

When the eyes are employed at near work, such as reading, etc., the muscles of the eye are engaged in the act. The ciliary muscle is especially brought into play, producing an increased convexity of the lens. If this action of the ciliary muscles is continued for a long time, there is an increased flow of blood to the eye, and consequently an increase in the contents of the eye. This increase of the contents of the eye will cause pressure against the walls of the eye, and will have a tendency to produce bulging of the walls at the weakest point. This weak point is at the entrance of the optic nerve, situated only

two lines from the *yellow spot*, which is the seat of the most perfect vision of the eye. The bulging at the entrance of the optic nerve increases the antero-posterior diameter of the ball, so that the rays of light passing through the lens cannot be brought to a focus upon the retina. This state of the eye is that of the near-sighted eye, and once established cannot be remedied.

The abuse of the eye, by long continued study, produces an irritability of the ciliary muscle, which increases the convexity of the lens. This condition of the lens may thus become permanent, and we will then have near-sightedness produced in another way.

The sclerotic coat is firm and tough. It is this coat which retains the eye in its approximately spherical form. Up to the sixteenth year of age, the sclerotic is more or less yielding; especially is it so up to the tenth year. After maturity (from the eighteenth to the twentieth year) the eye could stand four times as much abuse as would easily produce near-sightedness in the tenth year. It is chiefly between the tenth and sixteenth year that near-sightedness is acquired. For it is during this period that children have an increased amount of study imposed upon them out of school, and are kept a greater number of hours in school, with their eyes occupied with close work.

By way of illustrating the incipient stage of near-sightedness a case might not be amiss. G. S., aged twelve years, was sent to me by his mother with the request that I would ascertain what the difficulty he experienced with his eyes was due to, and that I would remedy it if possible. The history he gave was to the effect that he could not see the figures on the blackboard as well as he did at the last school term, that his eyes became tender and sore after studying for awhile. Upon testing the vision I found that he was near-sighted to a slight degree, and that he could see at a distance perfectly with a low power concave glass. He expressed himself delighted and desired that I would procure for him a pair of glasses similar to the ones he tried. Regarding, however, his near-sightedness as only apparent and due to irritability of the ciliary muscle from over use, to test the question, I in-

stilled a few drops of a solution of atropia into his eyes and sent him away with the request that he would return the following day. The effect of the atropia was a temporary paralysis of the ciliary muscles. This paralysis permitted the lens to return to its normal state, and upon the following day, I found upon again testing the vision that he was not at all near-sighted, but could see perfectly at a distance without a glass. I directed him to remain from school for six months, and interdicted all study for that length of time. This boy, if he had been permitted to continue his studies would, in all probability, have become permanently near-sighted. In a short time he would have procured glasses in order that he might see the objects upon the blackboard, and finally he would have become dependent upon glasses for distant vision. Not only the long continued use of the eyes, but their continued use in badly lighted school rooms, or by imperfect lamp light, will produce injury to the eyes. That the eyes of a large number of children resist these powerful causes of evil is no argument against their injurious effect.

The prevention of near-sightedness can easily be inferred from what has been said of the causes. The cause must be removed. If the school-house is badly illuminated, have this remedied by the admission of an abundance of light, which should be allowed to fall over the left shoulder. Have perfect ventilation of the rooms, for impure air by deteriorating the general health reduces the tone of the eye and of its muscles. Let the hours for study out of school be reduced, and require most of the study to be done during school hours. Frequent short intermissions during school hours is of great service to the eye as well as to the general health. The relative height of the seat and desk should be such, that stooping would be unnecessary. A stooping position favors congestion of the eyes, which, if continued, may bring on near-sightedness. Children should not be permitted to hold their books very near to the eyes while reading. If it appears necessary that they should do so in order to see clearly, then their eyes should be examined, to ascertain whether there is any defect.

There is a condition of the eye in which, although distant vision is perfect, fine work (such as sewing, reading fine print, etc.,) has to be brought close to the eye. Many of the cases of so-called "sore eyes" are due to this defect.

The following excellent "rules for the care of the eyes, especially in children" have been laid down by Dr. D. F. Lincoln, of Massachusetts. If observed they will prevent the increase of the disease, which has been the main topic of this paper:

"When writing, reading, drawing, sewing, etc., always take care that

(*a.*) The room is comfortably cool, and the feet warm.

(*b.*) There is nothing tight about the neck.

(*c.*) There is plenty of light, without dazzling the eyes.

(*d.*) The sun does not shine directly on the object you are at work upon, or upon objects in front of you.

(*e.*) The light does not come in front; it is best when it comes over the left shoulder.

(*f.*) The head is not bent very much over the work.

(*g.*) The page is nearly perpendicular to the line of sight; that is, that the eye is nearly opposite the middle of the page, for an object held standing is not seen so clearly.

(*h.*) The page or other object is not less than fifteen inches from the eye.

In any case, when the eyes have any defect, avoid fine needle-work, drawing of fine maps, and all such work, except for very short tasks, not exceeding half an hour each, and in the morning.

Never study or write before breakfast by candle-light.

Do not lie down when reading.

If your eyes are aching from fire-light, from looking at the snow, from over-work, or other causes, a pair of colored glasses may be advised, to be used for a while. Light blue, or grayish blue, or a light smoke color is the best shade; but these glasses are likely to be abused, and usually are not to be worn except under medical advice. Almost all those per-

sons who continue to wear colored glasses, having perhaps received advice from medical men to wear them, would be better without them. Traveling venders of spectacles are not to be trusted; their wares are apt to be recommended as ignorantly and indiscriminately as in the times of the "Vicar of Wakefield." If you have to hold the pages of "Harper's Magazine" nearer than fifteen inches to read it easily, it is probable that you are quite near-sighted, or possess imperfect vision. If you have to hold it two or three feet away before you see easily, you are probably far-sighted or over-sighted, hypermetropic, meaning by each of these terms a condition in which the range of perfect vision is more distant, than normal, from the eye. In either case, it is very desirable to consult a physician before getting a pair of glasses, for a *misfit* may permanently injure your eyes.

Never play tricks with the eyes, as squinting or rolling them.

The eyes are often troublesome when the stomach is out of order.

Avoid reading or sewing by twilight, or when debilitated by recent illness, especially fever.

Usually, except for aged persons or chronic invalids, the winter temperature in work-rooms should not exceed 60° or 65°. To sit with impunity in a room at a lower temperature, some added clothing will be necessary. The feet of a student or seamstress should be kept comfortably warm while tasks are being done. In winter the temperature of the lower part of the room is apt to be 10° or 15° lower than that of the upper—a condition which implies improper arrangements for heating.

It is indispensable in all forms of labor requiring the exercise of vision on minute objects, that the worker should rise from his task now and then, take a few deep inspirations with closed mouth, stretch the frame out into the most erect posture, throw the arms backward and forward, and if possible, step to the window or into the open air, if only for a moment. All this presupposes good health and discretion. Two desks,

or tables, in a room are valuable for a student—one to stand at, the other to sit at."

This little paper has been written with a view of calling the attention of parents and teachers to this subject, and warning them against the dangers to which the eyes of their children and pupils are exposed. If I have succeeded in doing this, the first step towards remedying the trouble has been taken.

MILK AS A FOOD.

BY B. W. TAYLOR, M. D., COLUMBIA, S. C.

The milk of the cow is, by custom, preferred to that of all other animals, and enters largely into the diet of both the infant and the adult. By analysis cow's milk is found to consist of water, butter, casein, sugar, and fixed and earthy salts; the nutritive qualities of milk depend on the combination of these alimentary substances, which may be classified as follows :

1st. Casein or curd, the nitrogenous or plastic ingredient which is subservient to the development of the flesh and organs of the body.

2d. The fatty portion in butter, and saccharine portion—the sugar of milk—the combustible substances. which are required for the respiration and fattening of the body.

3d. Water and saline ingredients for the purposes of the liquid constituents and for the solution of the solid substances.

The character of the milk depends much upon the food upon which the animal is fed ; and unless stall fed cows are fed exclusively on grass, their milk will be almost always acid. Cows fed upon cabbage, turnips, and *brewers lees* give a milk unfit for the use of infants, as it causes diarrhœa and cutaneous eruptions.

Nothing contributes more to maintain the good quality and quantity of the milk than the scrupulous cleanliness of the sheds or stables of the cows.

When refuse matter is not promptly removed, the milk has a bad taste and odor, of which it is difficult to deprive it.

Milk is a great absorber of all odors and gases, therefore it is necsssary that it should never be kept in the same room with vegetables, fruit, fish, oils, meats, or sour milk.

Experience has shown that the effect of boiling the milk is to check its tendency to become sour, and to extract a portion of the cream. By this process a large quantity of gas is expelled from perfectly fresh milk, and this tends to diminish the formation of lactic acid or sourness; it also destroys all *fungi* and renders it safe and more digestive for the infant.

Milk often propagates epidemics of typhoid and scarlet fevers, and when brought from dairies in infected localities to healthy families of consumers, or is that of a cow afflicted with ganget (a hard lump or swelling affecting the glands of one or two teats, but rarely the whole udder) it is thought to have caused diphtheria.

The milk of cows so affected should never be used.

Condensed milk when diluted with water, in the proportion of one part of milk to five parts of water, is equal to cow's milk.

When diluted by water alone it is apt to be followed by disagreeable results to the infant, viz: catarrh of the stomach and bowels.

Those however who take it mixed with a certain proportion of barley water thrive quite well, and when given in this way I have been unable to discover the difference between the use of it and the ordinary city milk.

It has been discovered that children who take the condensed milk and water readily grow fat, but when sick they have slight endurance. They begin to walk late and exhibit other signs of *rickets*.

The following rules for the management of children during the hot season was submitted by the Sanitary Committee to the Board of Health of New York, at the meeting held June, 1873, and ordered to be printed :

Over-feeding does more harm than anything else; nurse an infant a month or two old every two or three hours.

Nurse an infant of six months and over five times in twenty-four hours, and no more.

If an infant is thirsty, give it pure water, or barley water, no sugar.

On the hottest days, a few drops of whiskey may be added to either water or food ; the whiskey not to exceed a teaspoonful in twenty-four hours.

Boil a teaspoonful of powdered barley (ground in coffee-grinder) and a gill of water, with a little salt, for fifteen minutes, strain, then mix it with half as much boiled milk, add a lump of white sugar, size of a walnut, and give it luke-warm, from a nursing bottle. Keep bottle and mouth-piece in a bowl of water when not in use, to which a little soda may be added.

For infants five or six months old, give half-barley-water and half boiled milk, with salt and a lump of sugar.

For older infants, give more milk than barley-water.

For infants very costive, give oatmeal instead of barley. Cook and strain as before.

When your breast milk is only half enough, change off between breast milk and this prepared food.

In hot weather, if blue litmus-paper applied to the food, turns red, the food is too acid, and you must make a fresh mess, or add a small pinch of baking-soda.

Infants of six months may have beef-tea or beef-soup once a day, by itself, or mixed with other food; and when ten or twelve months old, a crust of bread and a piece of rare beef to suck.

No child under two years ought to eat at your table.

Give no candies, in fact nothing that is not contained in these rules, without a doctor's orders.

SUMMER COMPLAINT.

It comes from over-feeding, and hot and foul air. Keep doors and windows open.

Wash your well children with cold water twice a day, and oftener in the hot season.

Never neglect looseness of the bowels in an infant; consult the family or dispensary physician at once, and he will give you rules about what it should take and how it should be nursed. Keep your rooms as cool as possible, have them well ventilated, and do not allow any bad smell to come from sinks, privies, garbage-boxes or gutters about the house where you live. See that your own apartments are right, and complain to the Board of Health if the neighborhood is offensive. Where an infant is cross and irritable in the hot weather, a trip on the water will do it a great deal of good (ferryboat or steamboat), and may prevent cholera-infantum.

FORESTRY IN SOUTH CAROLINA, CONSIDERED IN ITS SANITARY AND HYGIENIC RELATIONS.

BY F. F. GARY, M. D.

The forests of South Carolina, embrace almost every species of deciduous and evergreen trees that are either desirable for beauty or useful for industrious purposes.

It is somewhat remarkable that a people living in the midst of primeval forests of such magnificent trees, should have ignored all means for their preservation.

No one who has given the subject proper consideration, will question the fact, that a calamity is surely being brought upon the State by the useless destruction of its forests.

The rapid increase of our population, the want of thrift of a large number of the colored people, the spread of various industries, the building of railroads, threaten, at no distant day, to destroy the best portion of our forests. The consequence of such destruction will be seriously felt, not only in our ma-

terial wealth, but in an increased amount of sickness, as well as in the climatic changes which are sure to follow. Such an event will reflect upon our refinement, civilization and cultivation, from the fact that nearly all civilized nations have, in some way, manifested an admiration and respect towards the majestic and venerable in plant life; this, no doubt, is partly due to the blessings conferred in the support of life, and in the aid derived by our industrial resources from this source.

In the United States, very little has been done to abate the evil, or to encourage tree culture; there are no institutions where forestry is taught, as is the case in Europe.

The general government, until recently, has done nothing except to refer the subject to a special commission, and to the publication of the excellent report of F. R. Hough. The consequence of this neglect, may be seen in the denudation of a great portion of our forests, in utter disregard of the common interests, and in ignorance by many, of future consequences by the stimulus of present gain.

While forests must be cleared to make room for such crops as are necessary to maintain our existence, this cannot be carried to such an extent as to destroy a certain proportion between cultivated fields and woodlands, without changing the climate, injuring the general health, as well as lessening the fertility of the soil. Our citizens should, therefore, be taught that they have no moral right to follow blindly an instinct that leads only to present gain, regardless of wide spread future evils as a consequence; we are but tenants of this beautiful earth, not owners in perpetuity; nor have we the right to injure the inheritance of those who succeed us, but rather is it our duty to leave it better for our having occupied it our allotted time.

South Carolina, by reason of its soil and climate, latitude and topography, possesses advantages over most of her sister States; and in the early spring months, the genial warmth of the sun—felt without oppression, and the generosity of the natural soil, combine to produce one of the most beautiful and brilliant flora that can be found any where in the South. Forests bear, however, other claims to our attention, than as being objects of beauty, or aids to our national

wealth; it is no longer a matter of doubt, that they exert a powerful influence upon health and climate; every effort then to promote the health of the people by an investigation into the causes that produce it should be encouraged, because such investigation, it is believed, will add to the usefulness, and happiness as well as the health of our people. The celebrated scientist, Dr. Max Von Pettenkofer, in one of his lectures says: "That mere chance will not explain the fact, that in the history of human civilization, it has always been unmistakably those nations that have shown the greatest care for the health of their citizens that have exerted the most powerful influence in the world." * * * * "There can be no doubt that one of the most important problems of the present day for medical science to solve is, the best means to reduce the tax that sickness is levying upon us, and which we are likely to entail on posterity unless we seek by some means to make it less oppressive."

How do forests influence the hygienic and sanitary conditions conducive to public health? We answer, in many and various ways, both directly and indirectly, as we will attempt to show in what follows.

Analysis of the reports of meteorological observations throughout the world, will warrant the following conclusion, viz, that the clearing of forests produces:

1st. A less amount of watery precipitation per annum.

2d. An increase in the amount of evaporation.

3d. Changes of the earth's surface, which instead of returning to water that falls, and allowing it to penetrate the soil, cause it to flow off rapidly, thus causing high water for short periods, followed by long droughts.

4th. Change of the climate by an alteration of moisture and temperature of the atmosphere.

What is climate? Humboldt thus describes it: "It is the combination of calorific, aqueous, luminous, aerial, and other phenomena which fix upon a country a definite meteorological character that may be different from that of another country."

Climate is also determined by the temperature and moisture of the air; without moisture or vapor there would be no clouds, no rain or fog, dew or snow, thunder or lightning. The amount of moisture in the atmosphere has great influence upon human health. Dry air is very injurious to the organs of respiration, and the fact that we breathe easier in forest air is due to the greater relative moisture.

In dry air the cutaneous perspiration is increased, and more warmth is taken from the body. Forests increase the vapor of the atmosphere as well as present evaporation: experiments have shown that it is sixty-three per cent. less than in open fields. They likewise serve, when extensive, as storehouses of moisture, from which the atmosphere is constantly supplied. A single full grown lime tree has been known to exhale twenty tons of water from Spring to Fall. Forests keep the soil in which their roots grow in a comparatively loose condition, and thus enable the melting snows and falling rain to sink easily into the ground; these in course of time are gradually given back to the atmosphere by exhalations through their leaves, or run slowly off, if there be a surplus, through springs, into the larger water courses. They also attract the moisture suspended in the air and conveyed there by the great atmospheric currents. In short, we may say that forests form natural reservoirs of moisture, and prevent heavy rains from rushing suddenly down into the valleys, causing floods.

They keep up a lasting supply of water in the natural streams, break the force of winds and storms, discharge electricity from the clouds, and exert generally a most beneficial effect on climate and vegetation.

They are poor conductors of heat, and slowly come to an equilibrium with the surrounding air; this enables them to carry the warmth of day into night, and the coolness of night into the morning. The Summer temperature is milder and more uniform, other things being equal, in a wooded country, and the severity of the Winter's cold less, and the excess of evaporation over rain fall very manifest, as are also the greater extremes of heat and cold, and higher winds. Physical sci-

ence teaches that winds are the result of the unequal warming of the earth's surface, the rotation of the earth, the approach and passage of areas of high and low barometers. Winds in their turn carry vapor, and wherever condensation takes place in rain, there the surface is covered with forests; but when the winds are deprived of their moisture, no rains fall, and there are arid deserts. Every cause tending to increase humidity or reduce the temperature is a cause of rain. Forests affect this in a greater degree than other agencies, as has been proven by springs and rivulets drying up after the cutting down of the trees. Trees also equalize temperature by exhaling large volumes of vapor into the air, and by protecting the earth from the direct rays of the sun, and by preventing solar irradiations.

So far as the climate of South Carolina is concerned, at present it is in most parts of the State all that could be desired by the invalid in search of health. Our Winters are tonic and bracing; the Autumn is superior to that of most countries; the months of July and August are rather warm for comfort; the cool winds of early Spring are sometimes, as was the case the present year, unpleasant, but take the year from January to December, the average will be in our favor, as compared with other places.

Certain forms of climates are the direct cause of disease. Rheumatism prevails where there are great changes of diurnal temperature, malarious fevers and bowel complaints where there is an elevation of temperature in a moist air, especially in summer. A dry, cold atmosphere is detrimental to the organs of respiration. Salubrity of climate is incompatible with sudden changes of temperature. Forests prevent the formation of malaria. It is well known that when the lands which have been cleared were covered with woods, what we term malaria, was not so common as at present. In the early period of the settlement of our State it was confined to what is called the "low country," and along the course of swamps and sluggish streams. At present its effects are observable in nearly every portion of the State at certain seasons, even to the foot of the Blue Ridge Mountains.

Another fact is observable, which is, that its effects, by reason of the free course of winds, are felt at places that are otherwise exempt from such influences. The village of Cokesbury, probably one of the healthiest in the State, escaped for over twenty years. The same may be said of almost every village in the upper part of South Carolina. Dr. E. R. Calhoun, of Greenwood, in Abbeville County, one of the oldest practitioners in the State, and a former resident of the historic town of Cambridge, says: "In the first four years after the settlement of Cambridge she was as exempt from malarious disease as any otner locality; but when her fertile soil became denuded of its forest growth and exposed to the rays of a scorching sun, she became the seat of all malarious diseases, and was the most unhealthy community in the upper part of South Carolina, during which time she was the paradise of doctors."

The history of Europe presents even more notable examples than the above. At Paolo, near Rome, a piece of woodland had stood between that place and a malarious district to the South, and while this remained the place was healthy. It was cut down and presently the South winds brought in the pestilential malarial fevers. Manziana has suffered in like manner since the olive forests were burned. A similar phenomenon was observed at Gezze. Lancesi says: "The insalubrity of Rome was increased when a pine forest to the South was cut down. The central plateau of Spain, once famed for its fertility, has in modern times become unhealthy and almost barren from the destruction of forest trees. Her once fertile fields now wither in the scorching heat of the long Southern summer, and violent winds in winter sweep over her bleak and arid plains." These examples show that forests exert an influence in modifying malaria, a low kind of organism that is so pestilential in causing what is known as zymotic diseases. Dr. Cartwright ascribes the salubrity of the bayous of Louisiana to the presence of the *Jussieura Grandifolia*, which he affirms purifies the stagnant water in which it grows. It has been discovered that other trees, the Eucalyptus, or blue gum of Australia

possesses some such influence. Dr. Samuel Henry Dickson in his practice of medicine says :

"It is an old notion that the foliage of trees has great efficacy as a defense against malaria ; some consider the effect mechanical, others chemical, while others believe that the deleterious effluvium possesses some inherent and peculiar property, by reason of which it is attracted and adheres to such foliage." The balsamic exudations of the pine forests of South Carolina in the region of Aiken and Summerville, whatever the explanation, have a well-known efficacious effect on the climate of those places. It is thought that these emanations convert the oxygen of the air into ozone. This agent as is well known, is one of the most powerful oxidants and anti-septics ; it purifies the air and prevents the spread of contagion, by chemically combining with the products of decomposition. The presence of this agent proves the absence of organic impurities.

In 1849 Schoenbein gave this name, which signifies to yield an odor (ozine,) to what he considered a modification of oxygen. Fox in his work on ozone, says ; " Individuals are sent to Prussia and other countries to breathe the highly ozonized exhalations of the coniferae for pulmonic affections." It is no doubt to this cause, that invalids from more northern climes suffering from consumption, find such relief at Summerville, Aiken and similar localities in our pine forests. It is a well known fact that when the air is rich in ozone, the enfeebled system is greatly invigorated. The good effect of sun-light is probably due to the same cause ; when present in excess, it is productive of catarrh, and when deficient, of fevers and other diseases that depend upon fermentation for the propagation of their germs. Epidemics of cholera are believed to be due to the absence of this purifying agent.

Another and very important hygienic effect of forests is that they keep the air pure, essential qualifications for good health. We use daily about thirty-three hogsheads of pure air, and give off ten cubic feet of carbonic acid gas; when these proportions are changed to a perceptible degree, the respira-

tory function is paralyzed, and the free escape of carbonic acid gas is prevented.

The power to resist disease is also diminished by breathing impure air, which produces heaviness of the head, unrefreshing sleep, languor and debility, with headache and loss of energy; recovery is only effected by substituting the breathing of pure air for a sufficient length of time.

Dr. Richardson in his work on Diseases of Modern Life, says: "It is this devitalized air in our over-crowded towns and cities, where there is no vegetation to revivify it, which we distinguish as something so different from the fresh country air that streams over forest and meadow." It is the breathing of this air that makes the child of the close city so feeble and lax, as compared with the child of the country; it is this air that renders the atmosphere of the crowded hospital so deficient in sustaining power; it is this air that gives many of our public institutions that smell which is so depressing both to the senses and to the animal power. Fox in his recent work on Sanitary Examinations of Water, Air and Food, says: "I have always maintained, and increased experience has only confirmed my previous conviction, that the impure air of our houses has much to do with the prevalence of such diseases as Phthisis, Bronchitis and Pneumonia, which together make up nearly one-fourth of the total mortality; and if we could strike a telling blow at that great universal evil, namely, poisoning by impure air, we should do much to save life."

A plentiful supply of pure air is therefore an essential condition of health. Nature, in the open air, has amply provided a remedy for the removal of the deleterious products arising from our lungs, and for the supply of healthful gases, by an economic and beautiful system. The carbonic acid gas thrown off by the lungs, is taken up by the trees, the carbon retained for the purposes of growth, and the oxygen set free.

One part of carbonic oxide in one thousand of air is the maximum admixture compatible with health.

When the air is not kept up to the standard of purity a large number of diseases, dependent upon a deficiency of oxygen as before stated, is induced; the chief of which, con-

sumption, is comparatively *unknowu among nomadic tribes.* This fact should furnish a hint to those threatened with this disease, that pure air in the open country is of great benefit in retarding, if not preventing its progress. It is also believed that the depression and deficiency of nervous and muscular power, produced by winds, notably the East winds, are induced by air in which the oxygen is deteriorated, in fact anti-ozonized.

To impress upon our people the necessity of preserving their forests it may not be out of place to refer to the experience in this respect in other countries, both ancient and modern.

The ancient cities of Babylon, Thebes, Memphis and Carthage, are notable examples of the desolation that followed in the destruction of their forests.

In the Vosges the soil has become arid, and inundations are frequent. In Germany the Narp and Gild rivers have disappeared, and exist only in name; the springs and brooks of Palestine are almost dry, and the fruitfulness of the land has disappeared.

The river Jordan is four feet lower than in the time of Christ. Greece and Spain furnish further evidence, and suffer severely from the destruction of their forests. Spain at the time of the Roman Republic, was covered with majestic forests, and the Romans built their ships there. The forests have disappeared, population has decreased, and agriculture is of little profit. In Hungary the periodical drought is attributed to the denudation of the forests. Sardinia and Sicily were once the granaries of Italy, but have long since lost their fruitfulness. There is a portion of Austria that five hundred years ago wos covered with an immense forest; it was cut down, and now it is a bleak barren, upon which some curse seems to rest. In Asia Minor ruin has taken the place of what was once the highest culture.

The Bible speaks of the magnificent proportions of the cedars of Lebanon; travellers tell us that at present they consist of only a few dwarf trees, and that the adjoining country is a desert, only able to support a few nomadic hordes.

But more convincing are the experience of more modern times in Russia, France, South Africa, and many portions of the United States, especially in the West, in Ohio, Pennsylvania and Maine. These States suffer from frequent droughts, floods and a lower temperature in Winter, and a frequent failure of their crops in consequence. In view of the foregoing facts the question naturally suggested is, how are we to preserve our forests ? We answer that a judicious system of cutting down, as our necessities require, and the replanting of other trees, will accomplish the purpose, as the experience of others will demonstrate. We read in history that in earlier years in the Delta of upper Egypt there were only five or six days of rain in the year; but that Mehemet Ali caused some two thousand trees to be planted ; this has increased the number of days of rain to forty-six in the year,

The Suez canal has produced remarkable results. Ismaila is built on what was a sandy desert, but since the ground has become saturated with canal water, trees and other plants have sprung up as if by magic, and with the reappearance of the vegetation the climate has undergone a change. The same change is taking place along the line of the great Pacific Railways, since the Companies commenced planting trees along the line, rain is becoming more abundant. In conclusion, I would exhort the people to make an effort to preserve the forests; in doing this they will be rendering a great good to the country in a sanitary point of view, as well as improving their lands, securing pure air, clear water, and green trees as well as protecting the public health. If we continue the devastation of our present forests, we will at the same time destroy a great portion of our means of developing our agricultural resources, and this, with the injury to health and climate, scarcity of fire-wood, etc., may well make us pause and consider before the calamity is upon us, then it will be too late to retrieve our errors.

HEMORRHAGIC MALARIAL FEVER.

BY T. P. BAILEY, M. D., OF GEORGETOWN, SO. CA.

The pathology of this disease still seems to be *sub judice*, and although easily recognized when a case once presents itself, it is now-classed as a separate entity, belonging to a group expressed by the vague term malaria. There have been other names applied to it, but the term hemorrhagic, appears, at least, to be more expressive, indicative, as it is, of the peculiar symptoms manifested under that head. It has been familiar to the profession of Georgetown only in the past ten or twelve years. I think the first case that came under my notice was in the year 1868. Since then it has prevailed to some extent in the South West. In Georgetown a case seldom occurs in the hot months, but generally late in the Autumn, and the most malignant cases that I ever observed occurred in November, December and January.

Symptoms.—These may be grouped into intermittent and remittent. A patient has had attacks of "chills and fever" from time to time, but has not been regularly treated, being content with taking a few doses of quinine occasionally, and thus "breaks" the paroxysm; he is in a condition of marked anemia; his pulse is feeble, and the tongue is pale and bloodless, resembling mashed beef; suddenly he is taken with a chill, perhaps not so decided as the ordinary cold stage of a malarial fever—his pulse is small and frequent, with or without nausea or vomiting. Soon the peculiar pathognomonic condition is noticed—he voids his urine, like black or grumous blood, which, when agitated, shows a yellowish tinge on the sides of the vessel. There is great nervous excitement, and a rapid tendency to collapse. The temperature is seldom more than 103°. I have observed nothing of particular note about the bowels as to constipation or diarrhœa. These symptoms scarcely exist more than about twelve or fourteen hours before the whole cutaneous surface becomes of a bright yellow hue, with some degree of yellowness of the conjunc-

tiva. As the febrile symptoms subside, the skin begins to pale off, the urine resumes its usual straw tint, and the complexion becomes fairer, becoming whiter and more anemic, while the failure of the vital powers is more marked. Although there may be a complete defervescence, the *vis vitæ* is at a very low ebb; this intermittent stage may last twenty-four hours, when another chill comes on, with aggravation of all these symptoms—the bloody-looking urine is so thick as to appear in clots in the vessel, and the skin again turns yellow. If these symptoms are not controlled, the patient soon dies like one in an ex-sanguined condition.

The most prevalent and fatal cases are those of the remittent form of the disease. These cases commence with a slight chill, anxious expression of countenance, with feeble remissions and exacerbations, and marked gastric irritation, and the black, bloody matter secreted by the kidneys is in rare cases vomited, and occasionally passed by the bowels. According to the exacerbations and the remissions of the fever, the urine becomes more hemorrhagic or of a pale hue, and the intensity of yellowness of the skin seems to be *pari passu* with the condition of the urine and vomited matters. The greater the profuseness of the secretion from the kidneys the more the decrease becomes amenable to treatment. Unfortunately, there is sometimes a suppression of this function, and the catheter, when introduced, evacuates a small quantity of dark, tarry-looking matter. These cases terminated fatally in a short time. Under treatment, many of these symptoms disappear; there is almost complete defervescence; the skin loses that icterode appearence, the urine becomes healthy looking, and all the functions *seem* to be well performed. But we are often doomed to disappointment; the patient's lips are white, the tongue shows a bloodless appearance, and he dies rapidly of exhaustion—or else, without any premonition, a convulsion suddenly closes the scene.

While under this head, I cannot do better than give a typical case which had but recently occurred at the time of this writing.

Miss H. B., aged about twenty-five, has been in a state of

ill-health for some time past, having had frequent attacks of intermittent fever. About three weeks before her last illness, I was summoned to see her. She is in an anæmic condition and has not seen her catamenia for some months. Some ferruginous pills with quinia and ext. nucis vomicæ were prescribed. Under this treatment she had somewhat improved and there had been no recurrence of intermittent fever until the 21st, which was the result of an unfortunate visit in the country. I was summoned the next day, not until she exhibited symptoms to which she had been a stranger. I found her with very yellow skin, slightly moist, and pulse rather small and frequent. Her urine is like so much black blood, tongue pale, but nothing otherwise significant, temperature 102¾°. On my next visit I found her with a pinched expression of the face and constant *rigors*, with numbness of the extremities, pulse small and frequent, temperature 102° and urine about the same. There is constant nausea and vomiting. In the evening I found pulse rather fuller, temperature about the same, nausea and vomiting still distressing. These symptoms became rapidly aggravated and she died that night, suddenly, in a convulsion.

I have thus given a distinctive type of the disease we frequently meet with. Of course there are deviations as to duration and violence. I have seen a case terminate in thirty hours, and then not for weeks. Relapses are not uncommon. A case has undergone three relapses and terminated in exhaustion after the disease was apparently subdued. There are certain idiosyncrasies observable; these I observe in persons of dark complexion with anæmic tendencies. I have a family under my medical care which is affected with the disease nearly every autumn, about the month of October. One member has had the disease three times. One died of a second attack some years after the first. Another, a little boy, relapsed from some error in diet and at last succumbed. Like other diseases that flesh is heir to, it readily invades the household of the poor who are badly fed and destitute.

Pathology.—We have much to learn as to the true nature of this disease. Everything seems to point to a condition of

toxemia. The system after being subjected to several attacks of malarial fever, is left in a cachectic condition, there is dyscrasia of the blood, and when there is a sudden paroxysm late in the season, of what is called a chill, but more like a rigor, there seems to be a breaking down of the corpuscles of the blood, as manifested in the secretion of the kidneys. Is the *sudden.* icterode appearance the result of hepatic derangement? It certainly has all the apparent indications of bile diffused through the tissues. When the disease was first seen by me I was fully of that opinion, and regarded the dark hemorrhagic-looking urine as really due to vitiated bile. Upon close investigation I have changed my views. While I am satisfied that bile does enter as one of the factors in the disease, and the secretion contains biliary matter, I am satisfied it is for the most part broken down blood-corpuscles. There are no special symptoms or rigors referable to the liver. Although there have been frequent attacks of intermittent fever, I have not *generally* noticed enlargement of liver or spleen ; in a *few* cases it is accompanied with splenic enlargements. I am disposed to regard the icterode appearance as due to the hematine of the blood, rendered so by contact with the oxygen of the atmosphere. I regret not having sufficiently investigated the subject by means of autopsies or chemical tests of the urine, but circumstances have prevented and I must leave the matter for future enquirers.

Diagnosis.—The resemblance of this disease to yellow fever is certainly in some cases very striking, so much so that it has been denominated swamp yellow fever. With febrile exacerbations and remissions, accompanied with black vomit, when there is no history given of the previous condition of the patient, such a case occurring in Charleston and other cities occasionally visited by yellow fever, would generally be so considered, but I have given the symptoms with sufficient clearness to distinguish the two diseases. The peculiar condition of the urine is usually the first sign of the coming storm, hence the term hematuric fever I think a more appropriate one.

Treatment.—It will be seen very clearly that the word asthenia expresses the condition we have to deal with. A thoroughly supporting treatment, and free use of stimulants and nourishment, with stimulant diaphoretics and quinia and iron, appear to be the general treatment. I think mercurials rather injurious except occasionally in the mildest form, such as hydrargyrum cum creta. Everything that would tend to depress should be avoided, for this reason cathartics are inadmissible, or at least given with great caution. If the bowels need unloading I prefer the enema. Quinine alone appears to be of little use, and is often disappointing. Caution is to be observed in the use of opiates; in certain cases, accompanied with great gastric irritation, sometimes the subnitrate of bismuth, with morphine, cautiously administered, has been of service. To allay nervous excitement and restlessness, as well as vomiting, by virtue of its hypnotic effect, I find the chloral hydrate with stimulant draphoretics very efficient. I have given quinia in large doses with a view to its full antiperiodic effect, but cannot observe any special benefit beyond what may be produced from smaller doses more frequently given during the remissions. The sheet anchor seems to be iron in these cases, while the vital forces are kept up by supporting treatment, as soon as the stomach will bear it. I commence the iron in combination with the quinia and iodide of potassium; sometimes pills of pil. ferri. carb. quinia and ext. nux. vomica are of benefit, but I find iron with some salt containing iodine more efficient; sometimes the tinct. ferri chloridi with quinia is of benefit, based on therapeutical principle, but the stomach does not bear its administration, and we are often disappointed. Belladonna has been recommended because of its capillary action, but no definite results have been attributed to its use.

GEORGETOWN, S. C., April 1st, 1881.

CAUSES AND PREVENTION OF "LIVER COMPLAINT" AMONG THE RURAL AND LABORING POPULATION OF SOUTH CAROLINA

BY S. BARUCH, M. D., HONORARY MEMBER AND EX-PRESIDENT S. C. MEDICAL ASSOCIATION; SURGEON FOR EYE, EAR, AND THROAT DISEASES, TO N. E. DISPENSARY, NEW YORK.

To criticise the fixed habits of people, and especially to suggest a change in their food and its preparation, is not an agreeable task, nor is it one which should be entered into without good and sufficient reasons. But long established customs must be investigated when they seem to be detrimental to the health and progress of a people. The old ruts must be abandoned when we find that our vehicles are no longer adapted to run in them.

This is a time of progress, of discovery in every department of knowledge. The comfort, the pleasure, the safety of mankind are the great aims of true progress. To prolong human life, to ameliorate its condition, to increase the sum of happiness in the world, these are the great problems of the hour—problems for whose solution the great intellectual workshops of the world are busied.

No one knows better than the farmer, how much has been done for the amelioration of labor by the arts and sciences. From the busy metropolis has been sent, as from a great heart, the stream that is arousing the most distant hamlet into wonderful activity.

The plough has been improved. Adjusted with fine mechanical skill, its draught has been lightened, and now the ploughman's heart laughs with joy as he sees the enormous furrows in which he treads. The soil is deepened for the penetration of light, air, heat and moisture, and the plant rejoices in the additional scope for development. Mechanical skill has given to the husbandman labor-saving machinery which his forefather would have regarded with amazement.

The common hoe has been, to a great extent, supplanted by the Dixon Sweep and the various other horse-cultivators; the flail has given way to the horse and steam thresher. Science has demonstrated the great value of drainage, the importance of proper saving and application of natural and artificial manures, and the value of improved seeds. All these advances have been slow and tedious. Prejudice, which has ever thwarted the efforts of inventors for the amelioration of the toiling masses, has fought these improvements (and many others here necesarily omitted) with bitter opposition. It is within the memory of many farmers to-day when all of the above mentioned improvements were unknown; in fact, many do not yet appreciate them. Even in the matter of food for animals, a matter apparently so simple, great advances have been made by chemists and practical agriculturists. Cotton seed, which formerly was found lying around the ginhouses, wasting away its nutrient and manurial qualities, is now carefully garnered by the provident farmer, because the man of science has taught him that it contains an oil which is remarkable for its blandness, that it contains besides this a food which, after furnishing animals with life-sustaining nutriment, issues from their bodies in a form so valuable for fertilizing purposes, that its price is set down by Voelcker as equal to the cost of the oilcake per ton.

When the entire South realizes the importance of this discovery, millions of dollars will be saved and earned by its practical application. As I am addressing farmers and laboring men chiefly, the men who are the bone and sinew of the land, and in whose behalf the scientist labors zealously with a view to raise them to that improved condition to which their industry and patience entitle them, I trust this agricultural allusion may not seem inappropriate.

I have here alluded to what the farmer owes to the scientist in order to enlist his interest in what the same scientist has to say upon another and vastly more important topic; viz: the preservation of his own health and the well-being of his family. Of what avail are all his possessions, obtained by his toil and by the utilization of scientific ideas, if his own health

suffers from a mode of life which is obviously improper and tends to shorten his days and to increase the burthens of life?

The State Board of Health has undertaken the task of teaching the people how to preserve their health and lengthen their days. Among the most gratifying memories of my past life in the good old Commonwealth of South Carolina, is the reflection that I have aided in establishing this beneficent institution, from which I anticipate great benefits for the people. It is, therefore, a pleasing task to me to comply with the request of its able Executive Chairman, to furnish a paper for its transactions. I have chosen a subject which has received my most anxious consideration during the past fifteen years. In a very large practice among all classes of people, much of it among farmers and laborers, I have found no disease more frequent than dyspepsia in its various plain and hidden forms. I had been taught that dyspepsia is a disease induced by sedentary life; that it is found chiefly among students, teachers, book-keepers, lawyers and artisans confined in close rooms, etc. I was not taught to look for this disease of sedentary life among farmers and other out-door laborers. If any class should enjoy exemption, the farmer should surely be thus privileged. But not so. Scarcely one day passed over my head while practicing medicine at Camden, without seeing one or more persons giving some of the following symptoms: Face pale, skin shriveled, tawny or tallowy, lips pallid, white of eyes bluish and glistening, tongue covered with a thin white fur, pain and fullness at pit of stomach after eating, nausea, eructation of gas or hot water (waterbrash), oppression of chest after meals, palpitation of heart, rapid breathing when walking fast, constipated bowels, languor, loss of appetite, wandering pains in various parts of the body, etc.

The usual interpretation of these symptoms, made by the patients, and even by some physicians was "liver complaint." The poor liver received all the blame. Blue pills, Brandreth's pills, by some called "Brandy" pills, liver pads, and all the advertised Liver Regulators had been resorted to with little or no benefit. "My liver don't act, doctor," was the constant

refrain from these poor dyspepsia-ridden people. The fact is that in my experience of twenty years in South Carolina, diseases of the liver were extremely rare. The few organic diseases of that organ were due to over-indulgence in alcoholics. I saw none of those organic liver diseases so frequent in the East Indies and other tropical countries. Our mild climate does not favor their development. But we have functional troubles resulting from dyspepsia or other stomach affections, which disappear when the latter are relieved.

It is not my province to discuss their treatment, but my aim is the more useful one, of demonstrating their cause, and teaching their prevention.

I hold, as the result of close study of this subject; that the chief cause of dyspepsia, or, as it is falsely called "liver complaint," among laboring men, are:

1st. Improper food.

2d. Improper preparation of food.

3d. Rapid eating.

What is the object of food? To sustain life and maintain the heat-producing, force generating, and nutritive functions of the body. These various functions must be greatly modified by the surroundings of the person. Hence man has been taught by experience and observation to choose such articles of diet as would best conduce to the proper and healthful performance of his functions.

In warm climates, viz: from 30° to 35° on each side of the Equator, vegetable food in some shape predominates as the principal food of the people. As we go beyond these latitudes, we find that the proportion of animal food is increased, until we reach the frigid zones, and here we find people subsisting chiefly on fish, flesh, and oil.

In the East, rice is the principal article of food, mixed sometimes with rancid butter, in small quantities; in Egypt, onions are largely used, with dates, melons, and other vegetables, and as a drink, water and milk.

In Arabia and Abyssinia, millet is a prominent food. In Persia, rice, wheat, milk, cheese, dates, grapes, melons, and wine. The Japanese avoid animal food and even milk and

its preparations, and manage to exist comfortably on hot rice cakes. The Arabs, especially the Bedouins, than whom no people endure more fatigue under greater exhausting circumstances, subsist chiefly on what they call "ayish," made of a paste of flour and camels milk, boiled or baked like our Southern hoecakes. They very rarely eat meat, and their only beverages are (or rather were several years ago,) water and coffee. And yet with this simple diet, they develop athletic frames and endure great fatigue under a burning sun. On the other hand, the Tartars living in the frigid north, although they lead a life very similar to that of the Bedouin-Arabs, have flesh as their favorite food, especially horse flesh, and they prepare a stimulating drink by fermenting their mare's milk. This is called "Koumiss," and affords them as convenient an escape from temperance pledges, as their more civilized brethren discover in old cider.

Dr. Kane says the Greenlander holds walrus in high esteem. "Its finely condense, tissue, and delicately permeating "fat, (oh, call it not blubber,) assimilate it to that of the ox, "and it is, beyond all others, the best fuel one can swallow."

"The Icelander's diet," says Mackenzie, "consists almost "solely of animal food; bread and vegetables are scarce, "hence much scurvy and skin diseases."

"In Siberia," (say the Wrangell's Expedition Reports,) "the people live on fish or Reindeer, boiled or fried in train "oil. Bread is rare, can be bought only by the rich."

"Among the Jukuts, fat is a great delicay, in every shape; "melted, fresh, or spoiled, quantity being more regarded than "quality."

These will suffice as examples of diet adapted to the extremes of temperature. In most temperate climates, a variety of food is necessary, and the state of civilization of a people, has, by some, been measured by their ingenuity to provide a variety of food and its preparations.

The diet of laboring men, and especially of farmers, in Holland, consists of milk, cheese, butter, and potatoes and bread, and the same obtains in Scotland and Ireland, meat being expensive and therefore rare among the peasantry.

In Germany, potatoes, milk, and large quantities of cheese, with beer, bread and butter, form the staple articles of food among the peasantry; meat is beyond the reach of many, and only obtained on especial occasions. And yet the ruddy cheeks and muscular frames of these peasants from Ireland, England, and Germany, indicate a high state of health, despite their hard work and scant allowance of meat.

What is the diet of the laboring men of the south? Dr. Bell says that "our men in America consume as much animal food in a day, as would support three laboring men in Europe. A man at harvest time consumes in three meals as much nutriment as would constitute luxurious living for eight East Indians or Chinese." The bill of fare of the average Southern laborer, is "Hog and Hominy," sometimes aided by collards. The sameness of this diet of bread and meat is objectionable; while the laboring man in health relishes his food at all times his body cannot be maintained in a high degree of integrity by a diet so devoid of variety. Especially obnoxious is the great consumption of salted and smoked meat. Science teaches that the process of salting diminishes the nutritive value of all meats. It has been demonstrated that a large proportion of the nutrient elements of pickled meat is found in the salt or its solution. "Not only does the contraction," says Dr. Pary, "which ensues, cause the infiltrating liquid to be driven out, but the liquefied salt tends further to draw out its diffusible organic and saline constituents." The great chemist Liebig, to whom agriculture owes so much, estimates the loss of nutritive value as amounting to one-half, soaking salted meats, he says, removes its saltness, but cannot of course restore the nutritive principles that have been lost. From experience it has been found that salted and dried meat cannot be used continuously for a lengthened period, without impairing the health." Think of it, *you not only pay for the weight of the salt in the meat, but you absolutely pay the salt for stealing away one-half of the nutritive value of the meat.*

This is a subject for grave consideration, and we may well ponder over it and seek a remedy. There is no speculation, no guess-work in the matter. I have stated the result of

actual experiment by the most competent chemist of the age, and by a man who has saved the farmer millions by his suggestion. Is it to be wondered at, that the peasantry of the South cannot compare favorably with the peasantry of other civilized countries in physical development and robust appearance, when we find that one-half of the food the former eat is worthless, so far as its nutritive qualities go?

Now what is the remedy? It may be held by some that salted meat is an absolute necessity to the people, that in our climate it cannot be otherwise preserved, that it is cheap, convenient, easily cooked and quickly eaten.

I do not pretend to advise the entire abolition of salted meats. On the contrary, as an element of a mixed diet, which I hold, is essential to the preservation of health, it holds an important place. I grant that it is a convenient food, but I deny that it is cheap in comparison with fresh meat, eggs, cheese, and other articles which furnish for the same price a larger amount of *absolute nutritive substance.* That its capability of being easily cooked and quickly eaten, is an advantage, I will endeavor to disprove in another portion of this paper.

Nor is it an absolute necessity to our people to depend upon salted meats as their chief diet. The sheep and goat, especially the latter, can be reared advantageously in all parts of the South, and beef also, by concert of action, be made a frequent article of food by farmers. The pig also furnishes a wholesome food, when thoroughly cooked, and combined with vegetables. Mutton, kid, beef, pork and poultry, should abound on our Southern farms, not alone supplying the latter, but also furnishing the towns and cities a goodly stock of sustenance. I need not here dwell upon the best methods for obtaining, rearing and utilizing the animals which furnish these articles of food, every well-informed farmer understands this subject. But I do beg to impress upon him the enormous benefits that would accrue to *health of the community,* from greater attention to the rearing of animals for fresh meat supplies.

Even if the latter were more costly, it would be vastly

cheaper for him to obtain them than spend his money for doctors and apothecaries bills. Aside, therefore, from the absolute economic value, resulting from the raising of fresh meats, and thus saving the outlay for salted meats which proves an unusual drain on the finances of the farmer, I present to him the sanitary aspect of this subject, not as a theory, but as the result of well founded observation made by competent authorities. Leave the old ruts I entreat you, and try the improved plan of feeding yourselves and families, just as you have the old ruts in feeding your lands and your cattle. Save the money you waste in buying worthless salt which robs your chief article of sustenance of half its virtue, save your health and strength at the same time by eating food, which though costing a little energy and effort to obtain it, will furnish you with rich blood, strong muscles and ruddy faces, giving you renewed life, and adding to the comforts and pleasures of which you have too few.

A large supply of vegetables, too, is essential to the maintenance of health. Not only to gratify the palate by their succulence and pleasant flavors, but to add variety to the diet, is the object of vegetable food. In the summer the system craves the acid vegetables, and in fact all others are grateful to the tired and overheated body. Blessed with a climate and soil which cannot be excelled anywhere in the world, the Southern farmer need not suffer from scarcity of vegetables at any season of the year. Aside from the pleasures they add to the table, their cultivation claims a foremost place as health preservers. The same is true of fruits and berries, all of which may be abundantly supplied by attention to a small plot of ground. The orchard and the vegetable garden, with their grape-arbors should be the pride of every householder in village or on the farm.

There is still one product of the farm, which, although I mention it last, is entitled to a preëminent place as an article of diet. Among the great staples of food, *milk and its products*, are prized by the peasantry of all temperate climes. I have alluded to the fact, that in many countries, whose rural population is the most robust and athletic, milk and its pro-

ducts form the chief articles of food, with bread and vegetables. It seems to be the natural diet of the farmer, provided on the spot, easily obtained, pleasant to the palate, nutritious, easily digested, and requiring but little preparation.

It is well known that in infancy the human body is entirely nourished by milk. Hence it is a complete food, containing all the essentials for sustaining life in a quiescent state. For the active laboring individual the addition of bread and vegetables would make it a complete food also. Cow's milk is more nutritious than human milk, inasmuch as it contains casein (cheese) in greater abundance. Cheese forms a staple article of food among the peasants of Europe. With good rye bread, butter, cheese, and a glass of milk or beer, these people make "a square meal," even at harvest time. In fact I have personal experience in this matter, having often enjoyed a satisfactory meal, consisting of wheat bread, butter, cheese, and milk or coffee, during our hot Southern summers.

A careful consideration of this subject has convinced me that cheese properly prepared, even in the most simple manner, affords an excellent substitute for meat, especially in our warm Southern climate. And, moreover, I honestly believe that he who would induce the Southern farmer to make and use cheese as a prominent article of food, would confer a boon upon him, not only in an economic sense, but also in the more important sanitary respect. Holding this view I venture to offer my own experience in the preparation of cheese. During my long residence in old Carolina, home made cheese was often used in my family, chiefly in the summer months, but not rarely also in the spring and fall. It was prepared by the following simple method, which any one of ordinary intelligence may succeed in: After the cream had been entirely or partially removed, the curd and whey were poured into a thin, but strong muslin or cheese-cloth bag. The latter was tied securely and suspended from the limb of a tree, or from a nail or beam in the porch, until the whey had drained off. The curd, now in a semi-solid condition, still enclosed in the bag, was placed into a press, consisting of two boards, one to receive the bag of curd, the other to cover it. A block of

wood placed under one end of the lower board facilitates draining. A heavy weight placed upon the upper board furnished the pressure required to expel all the whey. The curd now freed from superfluous moisture, was removed from the bag, more or less cream added, and salted to suit the taste. The whole mass was now worked with a paddle or kneaded like dough, until it formed a thoroughly smooth paste. The latter was shaped into cakes (not unlike the yeast cakes of good house-wives), and put away for use. In forty-eight hours a most delightful cheese was ready, which I have often preferred to meat at breakfast or supper. When put upon buttered bread in the same manner as butter, but more thickly, a more toothsome lunch cannot be formed. For an individual in ordinary health this home-made cheese affords a nutritious strengthening food, easily procured, cheap and always ready for the table, far preferable to the "store cheese." A good cow, sheltered and cared for with half the attention often bestowed upon worthless curs, would save enough lost time and doctor's bills in one year to pay for her keep tenfold. A pamphlet published by the Orange Judd Company, New York, on "How to Keep one Cow," is so replete with useful practical hints on this subject, that I would recommend its perusal to any one desiring to make milk a prominent article of diet.

FLOUR is usually chosen with a view to its white appearance. This is a great error. The modern process of milling wheat, while it enhances the beauty of the flour, deprives it of the most nutritious and wholesome element of the grain. The purchaser should aim to obtain flour made from the whole wheat, light, not too white, but capable of being baked into crisp, light bread. The innermost portion of the wheat kernel contains chiefly starch, while that which is next to the husk contains phosphates and other very nutritive substances, which form really the most important ingredients of the grain. Hence, when flour is very white, it is an evidence that the most important ingredient has been driven off by too thorough bolting.

The meal made from our staple grain (corn) is a most excel-

lent article of food. It contains more fat producing elements than wheat, and may, therefore, be preferred by those who are unable to procure sugar and fat meat. The bread made from corn meal is a perfect complementary food to milk and its products. Hence the Southern farmer may be independent of the entire world for his food supply, for these articles, corn bread, milk, cheese and clabber are sufficient in every point for the proper maintenance of health and strength, if aided by vegetables and fruit.

The second cause of "liver complaint" has been referred to "IMPROPER COOKING." Without wishing to criticise our good Southern housewives, I feel impelled to say a word of warning to them on this subject. The farmer's wife experiences a life of much hardship and anxiety, being burthened not only with the care of rearing children and keeping the house tidy and clean, but on small farms she is also charged with the preparation of food for the laboring portion of the family. To lighten the latter task, her predecessors have resorted to various methods of cooking, which experience has taught them to be instrumental in lessening the severity of the work, and shortening its duration. The *frying pan* presented itself as the most convenient cooking utensil, being readily cleaned and offering the most rapid mode of preparing a savory dish of bacon or other meat. Unfortunately this implement of cooking has become an implement of cruelty. I do not hesitate to condemn the frying pan as the origin of a large proportion of "liver complaint" cases, which are now ruining the health of our farmers. The shriveled appearance of fried meat indicates the desiccating effect of this process of cooking. The juices of the meat are evaporated in the open pan, a crust is formed, which contains the burnt oils and fat; the meat is thereby toughened, difficult to masticate, and equally difficult to digest. Some very skillful cooks succeed, by rapid and constant turning of the frying meat, in obviating some of the injurious effects of this culinary procedure, but even with the greatest care meat thus prepared is exceedingly indigestible. Even eggs, when fried, require half an hour longer for digestion than when hard boiled. Our people being, as will be

alluded to later, not slow eaters, it becomes the more important that the true office of cookery should be performed in the preparation of the food, viz: to make it not only palatable, but tender, to develop its juices, thus rendering it more easily chewed, and to soften and gelatinize the fibre. The aim of the cook should be to facilitate digestion, and not to impede it. *Of all methods of cooking, frying is the worst.* I cannot here enter into the chemical changes which the various culinary processes produce, and which would be interesting to those who desire to know the reason for everything. I will merely state, as the result of investigation by competent men, that for pickled or smoked meats, boiling is the best process of preparation. The old fashioned bacon and greens offers an admirable instance of the latter. The juices of the meat are intermingled with the tender leaves of the collard, and this commingling tends to soften the meat, which is permeated by the vegetable juices.

For fresh meats, roasting is an excellent method of cooking. The fire should be very hot, so that the outside surface of the meat may become rapidly congealed, and a crust be formed which serves as a shell to prevent the escape of the nutritive juices within. When fresh meat is boiled, the water should be at full boiling ere the meat is put in, and after the outside is congealed and toughened, the meat should be withdrawn from the great heat and allowed to boil or simmer slowly. By this method, the process of roasting is imitated, so far as retaining the inner juices can be attained.

Although boiling and roasting require more time and skill than frying, the advantage of the former over the latter is so great, that no good housewife should hesitate to abandon the latter. Besides, if time is an object, boiled or roasted meats are so easily preserved, and form so palatable a dish even when cold, that the element of advantage over frying, must not be disregarded.

Regarding fried meat as the cause of a large number of liver complaints, I would counsel the entire abandonment of the frying pan. Throw all these implements of cruelty into some old well, where even your poorer neighbors cannot

reach them, and you will save yourselves much trouble and annoyance. This would seem an heroic remedy, but I can safely assert that it will be a radical one for "Liver Complaints."

The baking of bread is a matter of great importance, and it would be useful to enter into greater detail than my space will permit. Suffice it to say, that the doughy, pasty biscuits and cakes which often disgrace the tables of our country friends, should be banished from the board. Greater pains should be bestowed upon the selection of flour, and the preparation of the dough by thorough kneading. Bread which is heavy and pasty, will tax the stomach of the strongest man. The best baked bread is difficult of digestion while fresh. How much more trying to the poor stomach must be these abominations of cookery, heavy, pasty bread. Even when stale, the latter will lie like a stone in the stomach, and torment its posessor for hours. It should be the aim of the good house-wife, to see to it that those who depend upon her for comfort, should not be oppressed by imperfect bread, while toiling in the sweat of their brows.

The ordinary hoe-cake, properly prepared, is a good mode of baking corn bread, but is not adapted for wheat flour. Pies and tarts are pleasant additions to the usual fare, but the paste for these dainties requires careful and thorough kneading.

Simple stewed fruit or berries, with sugar and milk, are to be preferred to pies and dumplings. Especially grateful to the stomach and wholsome withal, is fruit thus served for breakfast. The house-wife may do much to aid digestion, not only by skill in cooking, but also by ingenuity in providing a variety of food, by cleanliness in its preparation, promptness and neatness in its serving, and by the exclusion of such articles as have been condemned in this paper. Among wealthy people of intelligence, great attention is paid to these matters. It is the object of this paper to teach the humble, laboring man, and men of moderate means in other spheres of life, to attain the same comfort, pleasure and benefit from his homely fare which the rich man obtains from his dainties.

"Hunger is the best sauce," enabling the laboring man to derive more enjoyment from his simple fare, than the epicure realizes from his sumptuous feast.

I have reached now the third of the causes of "Liver Complaint," enumerated above, and I must dismiss it with a more brief allusion than its importance deserves.

RAPID EATING or "bolting food" is essentially an American habit. To obtain a correct conception of this habit, one should visit a restaurant in the vicinity of Wall Street, where sandwiches and other "prepared" food are dealt across the counter to the hungry, time-pressed brokers and clerks, or one should watch the passengers of a railway train while devouring their meal at a wayside inn. To these people time is precious; every fleeting moment may cost something, or delay a journey. But why should the American farmer eat "on time;" why should he, in the quiet, peaceful pursuit of his vocation, grudge himself the time he occupies in supplying his body with strength and energy for his labors. Even at the noonday meal, for which an entire hour is allotted, I have seen farmers shovelling in their food in hot haste, rising from the table with a quick push of the chair and rushing for his hat, as if a railway train were awaiting him. I have seen, too, the unhappy results of this habit, which seems to have taken root among these people, despite the fact that they have ample time to satisfy the demands of nature. Again and again have they been astonished on being asked about their habits when they came to me for advice, to learn that I charged them with rapid eating, and in a great many instances have they plead guilty to the charge. Especially among boys and young men has this pernicious bolting of food made numerous victims of "Liver Complaint." It is a difficult task to change a habit so fixed as this seems to be, but if I can succeed in inducing even a small number to heed my advice, I will be content. The object of chewing food is to prepare it for stomach digestion, not alone by mechanical subdivision of its particles, but also by commingling the latter with the saliva, which contains certain ingredients, without which rice, potatoes, bread and similar food could not readily

be digested. A slow, deliberate mastication is therefore as essential as is the proper cooking of the food. After the toil and worry of the day, the working man should enjoy his meal. This he cannot do, if he bolts his food in hot haste, and not only does he deprive himself of present enjoyment, but he also entails upon himself, by this infringement of nature's laws, future unhappiness.

With these plain facts before them, people surely do not require admonition to eat slowly. By attention the members of each family may become mutual monitors at meals, and thus correct this habit in each other very readily. Especially should the younger members of the family be watched and reprimanded.

VENTILATION OF SCHOOL ROOMS.

BY B. W. TAYLOR, M. D., COLUMBIA.

In order to fully understand our subject, it will be necessary to preface it with a short account of the normal composition of air, the impurities found in it, and their possible effect on health.

The air we breathe is composed of three ingredients; oxygen, nitrogen, and carbonic acid, which under normal circumstances are in the following proportions: in every hundred parts there are about twenty of oxygen, and seventy-nine of nitrogen, the remainder being of carbonic acid and water in a gaseous form.

Oxygen is the ingredient which is absolutely necessary for the support of animal life, for its withdrawal will cause death in a few moments. Whereas, nitrogen seems to be nothing more than a diluent for the administration of oxygen.

Carbonic Acid is of no use to animal life, and when in small quantities, it is without injury, but it is the life of the vegetable kingdom and when combined with moisture often constitutes the only food of certain plants, thus the animal kingdom consumes oxygen and gives off carbonic, and the vegetable kingdom consumes carbonic acid and gives off oxygen, in other words, the two are mutually dependent upon each other.

The amount of carbonic acid in the air, derived from respiration which may be present, without injury to man, is about five parts in one thousand, whereas, a much larger proportion may be mixed mechanically with air and breathed without inconvenience; this is exemplified by no ill effects being sustained by workmen engaged in the manufacture of soda water. We must seek some explanation for this contradiction of the popular error that carbonic acid is the real poison. Upon examination of the foul condition of the air in an occupied room we will find it due, not only to the carbonic acid but in a much greater proportion to watery vapor and the

animal matter thrown off by both lungs, and skin. Animal matter seems to purifiy almost instantly, and is a source of the disagreeable odor in badly ventilated rooms. Its effect on health is far more dangerous than carbonic acid, which at present is thought to be more of an obstructor of respiration than a poison.

CARBONIC OXIDE.

is often found in minute quantities in the air of crowded halls and school rooms arising from defective stoves or furnaces and gas pipes when it is an ingredient in the illuminating gas, its effect on the system is made known by giddiness, headache, and prostration of strength.

There are, besides these mentioned, many others found in the air, the quality of which varies in different cities, depending on the density of the population, the kind of fuel used and the meteorological conditions which are often responsible for these impurities, being carried long distances.

Among the solid ingredients may be mentioned finely pulverized earth in the form of dust, the debris of animal life, and mineral substances.

In this connection we will mention the ill effects on health caused by inhaling poisonous and irritating substances in powder, such as compounds of arsenic derived at times from wall papering, and those to which workmen in certain trades are exposed.

GASEOUS IMPURITIES.

In addition to those already mentioned, we have gaseous impurities derived from sewer air, the compounds of sulphur ammonia, &c., derived from decomposition of organic substances, nitric acid, and others which are not important to us in this connection.

ANIMAL EXHALATIONS.

Our subject calls us to look into impurities from animal exhalations, as the school rooms are often crowded much beyond the limits of health and vigor. Upon entering a badly ventilated room we are at once struck with the odor which meets

us. This is caused by the watery vapors and animal matter which are closely united, and become putrid in a short time. Animal matter, from perspiration and the breath, is deposited on the walls, carpet, and furniture of rooms, and can only be removed by thorough scrubbing, free admission of air, and sun light. It is most necessary that great cleanliness of person and clothing should be required, for even perfect ventilation cannot keep a room pure if the clothing of the inmates is saturated with animal effluvia, stale tobacco smoke, and other impurities derived from the dwellings of the pupils.

EFFECTS OF BAD AIR.

As might be supposed, no experiments have been made on man to decide how far bad air alone, without its usual accompaniments, filth and insufficient food, can produce disease or shorten life; but upon the lower animals it has been clearly shown to cause consumption, or increase the mortality from other diseases.

Dr. Neill Arnot relates the following incident: "A new house was built to receive monkeys in the Zoological gardens of London, and no expense was spared in its comfort and security. Unhappily however, it was believed that this object would be best secured by making the apartment like an English gentleman's drawing room; for warming, two ordinary drawing room grates were placed as near the floor as possible, and with low chimney openings, that the heat and air in the room should not escape by the chimney, while the windows and other openings in the wall above, were made as close as possible.

Some additional warm air was admitted through openings in the floor from around hot water pipes placed beneath.

For ventilation in cold weather openings were made in the skirting of the room, close to the floor, with the erroneous idea that the carbonic acid produced in the respiration of the animals, being heavier than other air in the room, would be separated from this. An escape was made above. When all this was done, about sixty healthy monkeys, many of which had already borne several winters in England, were put in the room.

A month afterward more than fifty of them were dead, and the remaining were dying. * * * * * *

It was only necessary to open in the winter a part of the ventilating apparatus near the ceiling, which had been prepared for the summer, and the room became at once salubrious.

The cause of this mortality was consumption.

In man, we have the soldier in barracks, those working in mines, the crowding of the sick in hospitals, and prison life, to show the great increase of consumption, the ravages of hospital gangrene, and the spread of the less fatal maladies under bad ventilation, and the vast lessening of all these under the more favorable surroundings of fresh air.

It was proven clearly during the late war, that the soldiers who were crowded into the "A" tents were much more prone to disease, and when sick, died in larger numbers than when sleeping in the open air and exposed to all the vicissitudes of the weather.

The great mortality among infants in the cities during the heat of summer, is not so much due to the high temperature, as to the vitiated air from animal and vegetable decomposition.

The digestive organs of both infant and adult, are more sensitive to the effects of foul air, as evinced by the occurrence of diarrhœa in the one, and the loss of appetite and general *malaise* in the other.

We find that bad air impairs the mental powers of both teacher and scholar, and engenders disgust for duties otherwise pleasant.

The question will now naturally arise, where are we to find the purest air to avoid these evils? Dr. Lincoln states: "The purest air is generally found from six, to forty feet; the most impure at seventy to ninety feet above the level of the ground, with a graduation rising to balloon height."

Now on the other hand, cellars (whence most of the air is derived which enters houses heated by furnaces,) contains the most foul air, from want of proper sanitary care, and as constant currents of air, are passing through the surrounding soil

the occupants of houses are in direct communication with the soil, as air will pass through floors as well as through doors and windows.

The soil is often polluted by sewerage and by dry wells, (so-called,) connected with water closets, and we will see that we will have more or less of the foul air to breathe.

We will now take up the subject of the ventilation of school houses, by first speaking of the site; much depends upon the situation, whether this be in the crowded street, with few windows and ventilators, and those all on one side; or in the grove, with ample space and windows on every side.

In the one you have the foul air of the city entering the room in which the air is already partly devitalized by the occupants, whereas in the other you have the air in a measure pure, and passing into a room, the facilities of ventilation of which are good, provided the teacher understands what is wanted, and utilizes the means at his command.

In addition to air, the direct rays of the sun should be allowed to enter the room a part of each day; therefore the house should be built with reference to the points of the compass, each side facing one of the *cardinals.*

When houses are constructed of brick it should be remembered that when the rooms are plastered on the brick walls, with no intervening laths and studs, you will have all the dampness of the bricks pouring down the walls within.

When houses are built in a damp situation it will cause the rooms above to contain excessive moisture, and with their unfavorable surroundings, we will have produced, consumption, catarrh and rheumatism.

TEMPERATURE.

Our remarks on this subject more particularly apply to the cold months of the year, as in the warmer season every effort is made to obtain all the air possible, and though the air of the school room may be impure from overcrowding, insufficient number of windows and ventilators, or bad surroundings, yet these evils are more easily overcome than ventilation in cold weather.

In school rooms warmed by furnaces or stoves, excesses of cold or heat are to be avoided, as either acts injuriously on the pupil.

There should be an effort made to secure an equal degree of temperature of 66° at which children can be made most comfortable, provided they are well clothed, fed and in health.

It often happens that the child, either at home or in the school room, is accustomed to a much higher temperature, consequently it resists cold badly and is chilled at a temperature by which others are warmed.

With the thermometer the teacher can regulate the temperature, and accustom the pupils at the beginning of the session to a proper degree of heat.

If the children have proper exercise of the lungs and muscle and are given frequent recesses and are made to play, their power to resist cold, to generate heat, and for mental application, is greatly increased.

A child soon tires of any work, and likes changes, and if we follow out nature's teachings we will give a recess, say five minutes per hour, and in this way vary the monotony of the long school day and its hard benches. Whilst this is going on don't forget to raise the window and open the doors for the admission of fresh air.

Does the child really lose in the amount of knowledge acquired by this course? By no means, for he has the power only to concentrate his mind so long on any subject, and the younger children learn no more in six hours than in three. Of course the older pupils can be kept in with profit for five or six hours with appropriate recess and exercise out of doors.

DRYNESS AND MOISTURE.

In order to secure comfort great dryness of the air of rooms is to be avoided, and it is often necessary to use evaporating dishes to secure this end, as the air, warmed up for the house, has a much increased capacity for moisture, and will appear very dry. Our supply of fresh air necessarily comes

from without, and we must look to it that our registers and ventilators are not closed. Each child should have from 225 to 250 cubic feet of air space, for children require as much air as adults, as they breathe faster.

Therefore a school-room 25x32 and 12½ feet high, should not accommodate more than forty children, and there should be free ingress and egress of air to keep it in a condition compatible with health.

We must not forget to call particular attention to the several modes of procedure on the part of teachers and others who think it sufficient to arrange for the egress of the air by ventilation windows and old-fashioned fireplaces, forgetting that fresh, pure air, must be admitted to supply the place of the foul air which has passed out. It is true the cracks in the doors, windows, &c., will allow some air to enter, but we deem this supply insufficient.

In other words, it should be as much a part of our work to ensure a complete renewal of the air when it becomes foul, as it is to give an outlet to the latter, and thus maintain a balance between the incoming and outgoing air. The question has arisen, how often should this renewal occur? This will depend on the capacity of the room, and the number of persons in it.

It is generally conceded that there should be ten cubic feet of air per minute for each person, and taking the dimensions of a school-room, and the number of pupils similar to that just given, we will say the air should be renewed three times per hour.

Our forefathers had no need for system in ventilation; the large fire-places and open buildings used as school-houses in primitive times, were amply sufficient, but now with tight houses, heated by furnaces, every effort is made to keep out the cold air, and our surroundings are different.

These furnaces supply warm air which is supposed to be pure, (though often coming from impure cellars); but no provision, in many cases, for the egress of the foul air. A room thus warmed, is unpleasant and stifling to one coming in, and to remedy this, it was thought that a hole in the ceiling would

accomplish the desired result. On examining into this, we find air is similar in its action to water, viz: The warm air from the register establishes a current with the ventilator in the ceiling. You will have this current passing through the room with impure air eddying up and down in other parts of it, and only portions of it are steadily drawn into the swift channel, and thus very poorly attaining the end sought for. Again, the cold air which comes in stagnates here and there, and occasions a chilly feeling.

The methods for obtaining ventilation are generally styled natural and artificial, the former being applied to air entering by cracks, doors, widows, and the pores in the walls, and the amount of air passing in being influenced by the force of the wind.

WINDOW VENTILATION.

In very cold climates double windows are used, and possess advantages, &c., which we need not discuss, as they are not required in the South. Nevertheless, it would be well to mention here, (though we believe all window ventilation alone, imperfect,) a simple way to aid ventilation, is to take a board three or four inches broad, and fit it under the lower sash, and thus raise this sash, so that between its upper part and the lower part of the upper sash, you admit air in an ascending direction; or, take a board and fit it on the upper part of the top sash, tilt it inwards, and thus let the air pass up towards the ceiling.

ARTIFICIAL VENTILATION.

There are two systems proposed to attain this end, viz: The "Plenum System," which forces air into the room, but being expensive and complicated we will not discuss it, and the "Aspiration," or "Vacuum System," which draws the air out. An instance of this last you will find in our ordinary chimney.

Following up this idea, flues or tubes of tin or zinc are run into the walls of a room with gas jets in them, and opening above the roof, either with or without the ordinary chimney

and are most serviceable as ventilators. Their power to draw the air from rooms depends upon the velocity of the flow of air through them.

1st. "This being influenced by the external and internal temperature."

2d. "Upon the height of the duct."

3d. "Upon the resistance or friction, *i. e.* upon the straightness and smoothness of the duct."

4th. "Upon the sufficiency of the supply of air to replace that which has been drawn from the room."

These ducts should lead out from the bottom of the room, from what has been before said, and in addition, as the hot air naturally ascends, you would hear it passing out rapidly through the duct if placed in the ceiling, and leading the cold air to act unpleasantly on the body.

Again, when placed below, you would remove the foul air at the point where generated.

Thus we see the foul air should be removed by ducts opening under the floor, and the fresh air from above being given a direction along the ceiling.

As to the success of this method, we will give General Morins experiment of heating and ventilating two amphitheatres in Paris, by ducts which lead from many openings around the bottom of the rooms, and connected with the bottom of the chimney at some distance from the rooms. In this chimney was placed a grate, in which a fire was lighted. When the rooms were in use, to quicken the draft, both rooms were warmed by furnaces, the heat entering around the top of the room. Cold air flues were so arranged in connection with hot air pipes that hot and cold air might be raised in quantity by shutting or opening the valves, and thus the fresh air might be let in at the right temperature.

"There was, by this system, great uniformity of temperature all over the rooms, and though the audience was in-

creased as much as tenfold, yet the thermometer at the ceiling and floor never raised more than 3½°."

He goes on to say that the regular porter had entire charge of the heating, &c., thus indicating its simplicty and efficiency.

Unfortunately for us, our school-rooms in most instances, are already built, and funds sufficient for their improvement are not at hand, but by the window ventilation above given, and by a recess of a few minutes each hour, during which time the windows are raised, we can renew the supply of air. At the same time the pupils, being warmed up by the play, will not feel the chilling of the rooms, and, in a mild climate like ours, a temperature of 66° will soon again be reached.

If we have succeeded in calling your attention to this important subject, we will feel we have not labored in vain. As a system of ventilation, this is applicable not only to school-houses, but to places of business, amusement and worship.

In preparing this paper, we are much indebted to articles on this subject by Dr. Lincoln, A. C. Martin, architect, of Boston, and to Buck's volumes on Hygiene.

AN ESSAY ON THE SANITARY CONDITION OF A RIDGE OF UPPER SOUTH CAROLINA—OCONEE COUNTY.

By J. W. Spearman, M. D., Oconee, S. C.

[*Reprinted from "Transactions" of the South Carolina Medical Association*, 1881.]

Geographically considered, this Ridge divides the waters of Seneca River, Conneross Creek, its principal tributary, on the one side, and Keowee and Little Rivers and Cane Creek on the other. These creeks and rivers have series of falls, consequently but little debris is deposited after freshets. Seneca River, however, the great receptacle of these streams, receives more or less deposit, and now and then an occasional case of malarial fever may occur. The average width of this Ridge proper is about one to two miles, by twenty in length, running

northwesterly from Cherry's Ferry to the foot of the Blue Ridge Mountains. Its elevation is about one thousand feet above the level of the sea. The soil—arid, poor and gravelly; growth—oak and hickory, interspersed with shrubbery. Gold and iron abound on this Ridge—the latter in abundance—and there is scarcely a well or spring that is not more or less impregnated. Some of these springs are, indeed, valuable for their medicinal virtues. The spring in the town of Seneca, especially, is to be highly prized, containing, according to analysis rendered by Prof. Land, of Atlanta, a large per cent. of iron carbonates, and sulphates of soda, lime and potassa, together with traces of lithia, sulphate of aluminium, etc.

The average population since 1822 has been kept up to about one thousand, and we learn from the older professional gentlemen, natives of this Ridge, coupled with our experience for the past ten years, that not a native case of tubercular consumption has ever occurred. Patients have moved in, having previously contracted the disease, or having inherited it, who have died, but even in these cases the disease seems to have been kept at bay, and life prolonged. In every instance, diseases of the respiratory organs have been greatly benefited, especially spasmodic and bronchial asthma. Epidemics occur here, as elsewhere, such as rubeola, and other similar eruptive diseases, but there has been no epidemic of typhoid fever or pneumonia for many years. Occasionally, sporadic cases of these diseases do occur, but are readily amenable to treatment. Cholera infantum is comparatively rare, and patients suffering from this disease, brought from a distance, soon get well. Typhoid patients will proceed through all the stages of the disease and recover with apparently little lesion. Bronchial, dropsical, hepatic, nephritic and intestinal sequences are rare. Neurotic and allied diseases have prevailed to a greater extent during the past winter than was ever known before, owing, perhaps, to the severe cold weather, producing capillary congestion, and, consequently, lowering vitality.

Ordinarily, the native rarely suffers from rheumatism or neuralgia, being generally of sanguineous temperament and florid complexion. It is undoubtedly a sanitarian choice for a

consumptive. We would prefer this Ridge rather than the mountain top, or the country about its foot, because of condensation of moisture on its top and heavy dews at the foot, impregnating the atmosphere with more or less aqueous matter, rendering inhalation oppressive.

We cannot present an exact meteorological registration of pressure, dryness, or humidity of atmosphere, but would say that, from the first of November to the first of March, the thermometer would hardly descend below freezing point, nor rise during the summer months above 80° or 90°, on an average, or taking mean temperature about 80°. Individuals, suffering from organic diseases of almost any kind, coming from a distance, and strictly confined to this Ridge, rapidly improve. The improvement we think due to the comparative deprivation of moisture, respiration being easier, and a more complete oxygenation of the blood—establishing free circulation, invigorating the nervous system and restoring the organs of secretion generally. Further proof of the healthful character of the climate is that human productiveness is great, a large per cent. of children being born annually. In all cases of nervous uterine diseases, the patients, with suitable association and employment, get well. Individuals residing about this Ridge have been known to attain the age of one hundred to one hundred and ten years. The average longevity, however, would be equal to, perhaps, from sixty-five to seventy-five. The bill of mortality would exhibit scarcely more than from one to three per cent. of the present population. More deaths occur in the colored than in the white race, and principally in colored children—the latter we think to be due in a great measure to neglect. In a general sanitary point of view, we would state that this Ridge is entirely free from endemic disease, except in crowded places, such as towns and villages, where accumulations in privies, water-closets and stock houses, and dark and badly ventilated rooms appear sometimes to give rise to ephemeral disease. Aside from the sanitary condition of this locality, there are other physical features that are quite noticeable. The fruit crop, for the last thirty years, has never failed, and when not

in abundance there has been an average yield. The peach and apple are very fine and luscious. While on the subject of sanitation, it is, perhaps, proper to remark that it is quite as much the duty of the medical adviser to urge sanitation as medication. Many diseases might be avoided by sufficient instruction, when, if permitted to occur, medication would fail in many instances. We would suggest, for invalids at least, a temporary residence here while suffering with disease —especially of the respiratory organs. And now, in conclusion, we would state, in order to anticipate inquiries, that our description is not imaginary. That this Ridge is rare in a sanitary sense is proven by its acting as a vertebra to surrounding ridges, being reduced, in some places, to not more than four hundred yards in width; that there is no endemic cause for disease, the atmosphere being comparatively without humidity; that the duration of life will exceed, or equal, that of almost any known locality. All these advantages make it a most desirable sanitary selection for the invalid.

PAPER ON THE RESTRICTION AND PREVENTION OF DIPHTHERIA.

DOCUMENT ISSUED BY THE STATE BOARD OF HEALTH OF MICHIGAN.

Because Diphtheria has been, and may be expected again to be, widely prevalent, and is a formidable and fatal disease, and because it is believed to be a disease very largely preventable, the State Board of Health desires to disseminate as widely as possible among the people of this State, the knowledge of certain facts and principles which seem to be well established as to the nature and causes of the disease, and the rational means for its restriction and prevention.

NATURE OF THE DISEASE.

Diphtheria is, primarily or secondarily, a constitutional or blood-poisoning disease. It attacks persons of all classes

and ages, but most frequently children under sixteen years of age.

In ordinary cases the poisonous principle of Diphtheria probably enters the blood by way of the mouth and the air passages.

The period of incubation of Diphtheria, or the time from a person's exposure to the disease to his coming down with it, varies somewhat—being usually from a few hours to seven or eight days; in some cases it is twelve or fourteen days.

Its most frequent local manifestations are in the mouth, throat and air passages. When in the mouth or upper part of the throat only, the disease is, as a rule, less dangerous and fatal, but none the less contagious than when in the air passages, below the fauces.

The specific contagium developed by the disease itself, and by which it spreads, is diffused by the exhalations (breath, perspiration, etc.) of the patient, through the air immediately surrounding him, as well as by clothing or other solid substances that have been brought into contact with the products of the disease.

As a rule, the virulence or malignancy of the contagium is in direct proportion to the severity of the case from which it emanates, though malignant cases may result from exposure to a mild case.

The more this contagium is allowed to accumulate in the room where the patient lies, the more powerful does it become.

RESTRICTION OF DIPHTHERIA.

Diphtheria is a contagious disease, and hence the strict observance of the following precautions is of very great importance.

1. Every person known to be sick with this disease should be promptly and effectually isolated from the public—one or two persons only should take the entire charge of the patient, and they should be restricted in their intercourse with other persons.

2. The room into which one sick with Diphtheria is placed

should previously be cleared of all needless clothing, carpets, drapery, and other materials likely to harbor the poison of the disease. This room should constantly receive a liberal supply of fresh air, without currents or drafts directly upon the patient. It will be well also to have the sun shine directly into the room.

3. In order that the guardians of the public health may have early warning, *it is important that every case of Diphtheria be promptly reported to the local board of health.*

4. The duties of Householders, Physicians and Boards of Health, as specified in sections 1734, 1735, 1732, and 1695 of the Compiled Laws of Michigan, 1871, should be rigidly enforced.* These duties are as follows:

"(1734.) SEC. 43. Whenever any *householder* shall know that any person within his family is taken sick with the small-pox, *or any other disease dangerous to the public health*, he shall immediately *give notice thereof to the Board of Health*, or to the *health officer* of the township (city or village*) in which he resides; and if he shall refuse or neglect to give such notice, he shall forfeit a sum not exceeding one hundred dollars."†

"(1735.) SEC. 44. Whenever any *physician* shall know that any person whom he is called to visit is infected with the small pox, or *any other disease dangerous to the public health*, such physician shall immediately *give notice* thereof to the Board of Health, or health officer, of the township (city or village*) in which such diseased person may be; and every physician who shall refuse or neglect to give such notice, shall forfeit, for such offense, a sum not less than fifty nor more than one hundred dollars."†

"(1832.) SEC., 41. When the small pox, *or any other disease dangerous to the public health*, is found to exist in any township, *the board of health shall use all possible care to prevent the spreading of the infection*, and to *give public notice of infected places* to travelers, by such means as in their judgment shall be most effectual for the common safety."

"(1695.) SEC. 4. The said Board shall also make such regulations as they may deem necessary for the public health and safety, respecting any *articles which are capable of containing or conveying any infection or contagion, or of creating any sickness*, when such articles shall be brought into or conveyed from, their township, or into or from any vessel; and if any person shall violate any such regulation he shall forfeit a sum not exceeding one hundred dollars."

The general laws of this State provide that the mayor and aldermen of cities, and the president and council or trustees of villages "shall have and exercise all the powers,

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* See Sec. 1740 Compiled Laws, 1871.

† Supervisors must prosecute for all such forfeitures, township officers must give notice to supervisor, prosecuting attorney must conduct suit if requested. See Sections (6852), (6853), and (6855), Compiled Laws of Mich., 1871.

and perform all the duties of a Board of Health as provided in this chapter." This is in chapter 46, Section (1740) 49, Compiled Laws of 1871, from which chapter all of the foregoing sections are taken. See also, in Laws of Mich., 1873, the general act for the incorporation of cities, Chapter XIV, Sections 1, 7, and 8.

It therefore appears, except possibly some special charter may exempt a city or village, the foregoing provisions of the law are probably applicable and in force in the cities and villages, as well as in all the townships, throughout the State.

5. The discharges from the throat, nose, and mouth are extremely liable to communicate the disease, and should be received on soft rags or pieces of cloth which should immediately be burned.

6. The discharges from the kidneys and bowels are also dangerous, and should be passed on old cloths and burned, or into vessels kept thoroughly disinfected by nitrate of lead, chloride of zinc, or sulphate of iron (copperas), and then be *buried* at least 100 feet distant from any well.

Copperas, dissolved in as little hot water as will dissolve it, is a good disinfectant for this purpose.

7. Nurses and attendants should be required to keep themselves and their patient as clean as possible; their own hands should be frequently washed and disinfected by chlorinated soda.

8. Soiled bed and body linen should at once be placed in boiling water or in water containing chlorinated soda, chlorinated lime, or solution of chloride of zinc.

9. All persons recovering from Diphtheria should be considered dangerous, and therefore no such person should be permitted to associate with others or to attend school, church, or any public assembly, until in the judgment of a careful and intelligent physician he can do so without endangering others.

10. The body of a person who has died of Diphtheria, should as early as practicable be placed in the coffin, with disinfectants, and the coffin should then be tightly closed. Afterwards, the body should not be exposed to view except through glass.

11. No public funeral should be held at a house in which there is a case of Diphtheria, nor in which a death from

Diphtheria has recently occurred. No children, at least, and it would be better in most cases that few adults, should attend such a funeral.

12. The room in which there has been a case of Diphtheria, whether fatal or not, should, with all its contents, be thoroughly disinfected by exposure for several hours to strong fumes of chlorine gas, or of burning sulphur, and then, if possible, it should for several days be exposed to currents of fresh air.

To disinfect an ordinary room with chlorine gas: having tightly closed all the openings of the room, place in it an open earthen dish containing four ounces of peroxide of manganese; pour on this one pound of strong muriatic acid, being careful not to breathe the fumes. When certain that continuous evolution of chlorine is taking place, leave the room and close the door.

To generate sulphurous acid gas, put live coals on top of ashes in a metallic pan, and place on the coals sulphur in powder or fragments.

A convenient way is to place the coals and the sulphur on a heated stove plate or cover turned bottom upward in a pan half filled with ashes. To disinfect 100 cubic feet of air requires the thorough burning of about one and one-half ounces of sulphur.

13. After a death or recovery from Diphtheria, the clothing, bedding, carpets, mats, and other cloths which have been exposed to the contagium of the disease should either be burned, exposed to superheated steam, to a degree of dry heat equal to 240° F., or be thoroughly boiled.

The Foregoing Methods of Disinfection are Applicable in all Contagious Diseases.

PREVENTIVE MEASURES.

14. Avoid the special contagium of the disease.

15. Beware of crowded assemblies in ill-ventilated rooms.

16. The grounds under and around the house should be well drained.

All influences which depress the vital powers, and vitiate the fluids of the body, tend to promote the development and spread of this disease. Among these influences perhaps the most common and powerful are, *impure air* and *impure water*. Because of this, and as a means of lessening the danger of contracting almost all other diseases, the following precautions should always be taken, but more particularly during the prevalence of any such disease as this.

17. No vegetable or animal matter should be allowed to decompose on the surface of the ground near the house.

18. If any soap-factory, slaughter-house, rendering establishment, or other source of foul odors, contaminate the air which you and your children daily breathe, take immediate measures through your local Board of Health or Health Officer to have such nuisance abated.

19. Your *own privy* especially, should at all times be thoroughly disinfected, by dry earth, coal ashes, or copperas water; and the receptacle should be constructed so as to be water-tight and to be tightly covered when removed to be emptied, as it should be often enough to prevent the air about it from becoming offensive, and in cold weather so far as possible.

20. Your whole *house* and especially its sleeping rooms *should be well ventilated.*

21. Your *cellar should be dry* and well ventilated, it should frequently be whitewashed, and always kept clear of decomposing vegetable or other substances.

22. No cesspool should be allowed near the house. If there be one, it should either be removed or be thoroughly and frequently disinfected with sulphate of iron (copperas).

23. Your *house drains* should be looked to with scrupulous care, to see that they are well trapped, kept clear, and ventilated into the open air.

24. Your house should not have uninterrupted connection with a sewer. Be sure that the waste pipes do not permit the entrance of sewer gas into the house, but that they enter the sewer through an open-air space, or at least through a space freely ventilated to the open air.

25. Be sure that your *drinking-water* is not contaminated by surface drainage, nor by leakage from the drain, gas-pipes, sewer, cesspool, or vault.

The foregoing document, planned by Homer O. Hitchcock, M. D , assisted by other members of this Board, is published by the State Board of Health for distribution throughout the State.

In order that the document may do the greatest possible good, it is hoped that each one who receives it will not only make such use of it as will tend to disseminate most widely the suggestions and statements of fact contained therein, but will also *act for the restriction or prevention of this disease* in accordance with its suggestions, or by other effective measures.

Any communication on the subject may be addressed to, OFFICE OF STATE BOARD OF HEALTH, LANSING, MICHIGAN.

After reading this document carefully, please preserve it for future reference.

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